

CONSTRUCTION PERMIT OFFICE OF AIR MANAGEMENT

**AlliedSignal, Inc.
3520 Westmoor Street
South Bend, Indiana 46628-1373**

This permit is issued to the above mentioned company (herein known as the Permittee) under the provisions of 326 IAC 2-1 and 40 CFR Part 52.780, with conditions listed on the attached pages.

Construction Permit No.: CP141-8761-00005	
Issued by: Paul Dubenetzky, Branch Chief Office of Air Management	Issuance Date:

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SECTION A SOURCE SUMMARY

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM). The information describing the source contained in conditions A.1 through A.3 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this permit pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

A.1 General Information

The Permittee owns and operates an aircraft landing system manufacturing operation.

Responsible Official: Carl Montalbine
Source Address: 3520 Westmoor Street, South Bend, Indiana 46628-1373
Mailing Address: 3520 Westmoor Street, South Bend, Indiana 46628-1373
SIC Code: 3728
County Location: St. Joseph
County Status: Attainment for all criteria pollutants
Source Status: Part 70 Permit Program
Major Source, under PSD Rules;
Major Source, Section 112 of the Clean Air Act

A.2 Emission Units and Pollution Control Equipment Summary

The source is hereby authorized to construct the following emission units and pollution control devices:

- (a) Four (4) electric carbonization furnaces, each with a maximum capacity of 2,900 pounds of preforms of brake discs per batch at a maximum rate of 91 batches per year, including:
 - (1) Two (2) previously permitted electric carbonization furnaces (ID Nos. ECF-2 and ECF-3), both controlled by one (1) natural gas fired thermal oxidizer (ID No. TO-1) rated at 1.5 million (MM) Btu per hour, exhausting through one (1) stack (ID No. 470).
 - (2) Two (2) new electric carbonization furnaces (ID Nos. ECF-4 and ECF-5), both controlled by one (1) natural gas fired thermal oxidizer (ID No. TO-2) rated at 1.5 MMBtu per hour, exhausting through one (1) stack (ID No. 471);
- (b) Twenty (20) chemical vapor deposition (CVD) units, also known as carbon vapor deposition units, including:
 - (1) Two (2) existing, previously unpermitted CVD units (ID Nos. CVD-1 and CVD-2), each with a batch maximum capacity of 300 pounds per day of brake disks, and a maximum material input rate of 600 standard cubic foot per hour (scfh) of natural gas, 150 scfh of nitrogen gas, and 40 scfh of propane gas throughout the soak phase of each cycle.
 - (2) Eleven (11) existing, previously unpermitted CVD units (ID Nos. CVD-3 through CVD-13), each with a batch maximum capacity of 1,000 pounds per day of brake disks, and a maximum material input rate of 7,000 scfh of natural gas, 670 scfh of nitrogen gas, and 500 scfh of propane gas throughout the soak phase of each cycle.

- (3) One (1) previously permitted CVD unit (ID No. CVD-14), with a batch maximum capacity of 1,000 pounds per day of brake disks, and a maximum material input rate of 7,000 scfh of natural gas, 670 scfh of nitrogen gas, and 500 scfh of propane gas throughout the soak phase of each cycle. (Previously permitted in CP-141-8117-00005, issued May 20, 1997.)
- (4) Six (6) new CVD units (ID Nos. CVD-15 through CVD-20), each with a batch maximum capacity of 1,000 pounds per day of brake disks, and a maximum material input rate of 7,000 scfh of natural gas, 670 scfh of nitrogen gas, and 500 scfh of propane gas throughout the soak phase of each cycle.

The exhaust gas from each CVD is collected in a pressurized storage vessel (ID No. PV-1) for combustion by turbine for VOC control.

- (c) Eight (8) process gas fired turbines to control VOC emissions from the CVD units and to generate electricity, each with 8.71 million (MM) Btu heat input capacity with water-injected low-NO_x burners, including:
 - (1) Five (5) previously permitted process gas fired turbines, ID Nos. GT-1 through GT-5. The turbines exhaust through stacks numbered SGT-1 through SGT-5, respectively. (Turbines GT-1 through GT-5 were originally permitted with dry, low-NO_x burners in CP-141-7277-00005, issued March 26, 1997.)
 - (2) Three (3) new process gas fired turbines, identified as GT-6 through GT-8. The turbines exhaust through stacks numbered SGT-6 through SGT-8, respectively.

Natural gas will be fired in each of the turbines for purging and startup.

A.3 Part 70 Permit Applicability [326 IAC 2-7-2]

This stationary source is required to have a Part 70 permit by 326 IAC 2-7-2 (Applicability) because it is a major source, as defined in 326 IAC 2-7-1(22)).

A.4 Prior Permit Conditions Superseded [326 IAC 2]

The terms and conditions of this permit incorporate all the current applicable requirements for the two (2) electric carbonization furnaces identified as ECF-2 and ECF-3, the one (1) chemical vapor deposition unit identified as CVD-14, and the five (5) process gas fired turbines identified as GT-1 through GT-5, and supersede all terms and conditions in CP-141-7277-00005, issued March 26, 1997, and CP-141-8117-00005, issued May 20, 1997. All terms and conditions in CP-141-7277-00005 and CP-141-8117-00005 are no longer in effect.

SECTION B GENERAL CONSTRUCTION AND OPERATION CONDITIONS

THIS SECTION OF THE PERMIT IS BEING ISSUED UNDER THE PROVISIONS OF 326 IAC 2-1 AND 40 CFR 52.780, WITH CONDITIONS LISTED BELOW.

Construction Conditions [326 IAC 2-1-3.4]

B.1 General Construction Conditions

- (a) The data and information supplied with the application shall be considered part of this permit. Prior to any proposed change in construction which may affect allowable emissions, the change must be approved by the Office of Air Management (OAM).
- (b) This permit to construct does not relieve the permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.

B.2 Effective Date of Permit

Pursuant to IC 13-15-5-3, this permit becomes effective upon its issuance.

B.3 Revocation of Permits [326 IAC 2-1-9(b)]

Pursuant to 326 IAC 2-1-9(b)(Revocation of Permits), the Commissioner may revoke this permit if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.

B.4 Permit Review Rules [326 IAC 2]

Notwithstanding Construction Condition B.5, all requirements and conditions of this construction permit shall remain in effect unless modified in a manner consistent with procedures established for modifications of construction permits pursuant to 326 IAC 2 (Permit Review Rules).

B.5 First Time Operation Permit

This document shall also become a first-time operation permit pursuant to 326 IAC 2-1-4 (Operating Permits) when, prior to start of operation, the following requirements are met:

- (a) The attached affidavit of construction shall be submitted to the Office of Air Management (OAM), Permit Administration & Development Section, verifying that the facilities were constructed as proposed in the application. The facilities covered in the Construction Permit may begin operating on the date the Affidavit of Construction is postmarked or hand delivered to IDEM.
- (b) If construction is completed in phases; i.e., the entire construction is not done continuously, a separate affidavit must be submitted for each phase of construction. Any permit conditions associated with operation start up dates such as stack testing for New Source Performance Standards (NSPS) shall be applicable to each individual phase.
- (c) Permittee shall receive an Operation Permit Validation Letter from the Chief of the Permit Administration & Development Section and attach it to this document.
- (d) The operation permit will be subject to annual operating permit fees pursuant to 326 IAC 2-7-19 (Fees).
- (e) The Permittee has submitted their Part 70 permit application (T141-7442-00005) on December 10, 1996, for the existing source. The equipment being reviewed under this permit shall be incorporated in the submitted Part 70 application.

Operation Conditions

B.6 General Operation Conditions

- (a) The data and information supplied in the application shall be considered part of this permit. Prior to any change in the operation which may result in an increase in allowable emissions exceeding those specified in 326 IAC 2-1-1 (Construction and Operating Permit Requirements), the change must be approved by the Office of Air Management (OAM).
- (b) The permittee shall comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder.

B.7 Preventive Maintenance Plan [326 IAC 1-6-3]

- (a) If required by specific condition(s) in Section D of this permit, the Permittee shall prepare and maintain Preventive Maintenance Plans (PMP) within ninety (90) days after issuance of this permit, including the following information on each:
 - (1) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices;
 - (2) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions;
 - (3) Identification and quantification of the replacement parts that will be maintained in inventory for quick replacement.

If due to circumstances beyond its control, the PMP cannot be prepared and maintained within the above time frame, the Permittee may extend the date an additional ninety (90) days provided the Permittee notifies:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Management
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

- (b) The Permittee shall implement the Preventive Maintenance Plans as necessary to ensure that lack of proper maintenance does not cause or contribute to a violation of any limitation on emissions or potential to emit.
- (c) PMP's shall be submitted to IDEM, OAM, upon request and shall be subject to review and approval by IDEM, OAM.

B.8 Transfer of Permit [326 IAC 2-1-6]

- (a) In the event that ownership of this source is changed, the Permittee shall notify IDEM, OAM, Permit Branch, within thirty (30) days of the change. Notification shall include a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the Permittee and the new owner.
- (b) The written notification shall be sufficient to transfer the permit from the current owner to the new owner.
- (c) The OAM shall reserve the right to issue a new permit.

B.9 Permit Revocation [326 IAC 2-1-9(a)]

This permit to construct and operate may be revoked for any of the following causes:

- (a) Violation of any conditions of this permit.
- (b) Failure to disclose all the relevant facts, or misrepresentation in obtaining this permit.
- (c) Changes in regulatory requirements that mandate either a temporary or permanent reduction of discharge of contaminants. However, the amendment of appropriate sections of this permit shall not require revocation of this permit.
- (d) Noncompliance with orders issued pursuant to 326 IAC 1-5 (Episode Alert Levels) to reduce emissions during an air pollution episode.
- (e) For any cause which establishes in the judgment of IDEM, the fact that continuance of this permit is not consistent with purposes of 326 IAC 2-1 (Permit Review Rules).

B.10 Availability of Permit [326 IAC 2-1-3(l)]

The Permittee shall maintain the applicable permit on the premises of this source and shall make this permit available for inspection by the IDEM, or other public official having jurisdiction.

B.11 Malfunction Condition [326 IAC 1-6-2]

- (a) A record of all malfunctions, including startups or shutdowns of any facility or emission control equipment, which result in violations of applicable air pollution control regulations or applicable emission limitations shall be kept and retained for a period of three (3) years and shall be made available to the Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM) or appointed representative upon request.
- (b) When a malfunction of any facility or emission control equipment occurs which lasts more than one (1) hour, said condition shall be reported to OAM, using the Malfunction Report Forms (2 pages). Notification shall be made by telephone or facsimile, as soon as practicable, but in no event later than four (4) daytime business hours after the beginning of said occurrence.
- (c) Failure to report a malfunction of any emission control equipment shall constitute a violation of 326 IAC 1-6, and any other applicable rules. Information of the scope and expected duration of the malfunction shall be provided, including the items specified in 326 IAC 1-6-2(a)(1) through (6).
- (d) Malfunction is defined as any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. [326 IAC 1-2-39]

B.12 Permit No Defense [326 IAC 2-1-10] [IC 13]

Indiana statutes from IC 13 and rules from 326 IAC, quoted in conditions in this permit, are those applicable at the time the permit was issued. The issuance or possession of this permit shall not alone constitute a defense against an alleged violation of any law, regulation or standard.

SECTION C SOURCE OPERATION CONDITIONS

Entire Source

Emission Limitations and Standards [326 IAC 2-7-5(1)]

C.1 Major Source

Pursuant to 326 IAC 2-2 (Prevention of Significant Deterioration) and 326 IAC 2-3 (Emission Offset), this source is a major source.

C.2 Opacity [326 IAC 5-1-2]

Pursuant to 326 IAC 5-1-2 (Visible Emissions Limitations), except as provided in 326 IAC 5-1-3 (Temporary Exemptions), visible emissions shall meet the following, unless otherwise stated in this permit:

- (a) Visible emissions shall not exceed an average of thirty percent (30%) opacity in twenty-four (24) consecutive readings, as determined in 326 IAC 5-1-4.
- (b) Visible emissions shall not exceed sixty percent (60%) opacity for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) in a six (6) hour period.

C.3 Operation of Equipment

All air pollution control equipment listed in this permit and used to comply with an applicable requirement shall be operated at all times that the emission units vented to the control equipment are in operation, as described in Section D of this permit.

C.4 Asbestos Abatement Projects - Accreditation [326 IAC 14-10] [326 IAC 18] [40 CFR 61.140]

- (a) Notification requirements apply to each owner or operator. If the combined amount of regulated asbestos containing material (RACM) to be stripped, removed or disturbed is at least 260 linear feet on pipes or 160 square feet on other facility components, or at least thirty-five (35) cubic feet on all facility components, then the notification requirements of 326 IAC 14-10-3 are mandatory. All demolition projects require notification whether or not asbestos is present.
- (b) The Permittee shall ensure that a written notification is sent on a form provided by the Commissioner at least ten (10) working days before asbestos stripping or removal work or before demolition begins, per 326 IAC 14-10-3, and shall update such notice as necessary, including, but not limited to the following:
 - (1) When the amount of affected asbestos containing material increases or decreases by at least twenty percent (20%); or
 - (2) If there is a change in the following:
 - (A) Asbestos removal or demolition start date;
 - (B) Removal or demolition contractor; or
 - (C) Waste disposal site.
- (c) The Permittee shall ensure that the notice is postmarked or delivered according to the guidelines set forth in 326 IAC 14-10-3(2).
- (d) The notice to be submitted shall include the information enumerated in 326 IAC 14-10-3(3). All required notifications shall be submitted to:

Indiana Department of Environmental Management
Asbestos Section, Office of Air Management
100 North Senate Avenue, P.O. Box 6015
Indianapolis, Indiana 46206-6015

- (e) **Procedures for Asbestos Emission Control**
The Permittee shall comply with the emission control procedures in 326 IAC 14-10-4 and 40 CFR 61.145(c). Per 326 IAC 14-10-4 emission control requirements are mandatory for any removal or disturbance of RACM greater than three (3) linear feet on pipes or three (3) square feet on any other facility components or a total of at least 0.75 cubic feet on all facility components.
- (f) **Indiana Accredited Asbestos Inspector**
The Permittee shall comply with 326 IAC 14-10-1(a) that requires the owner or operator, prior to a renovation/demolition, to use an Indiana Accredited Asbestos Inspector to thoroughly inspect the affected portion of the facility for the presence of asbestos. The requirement that the inspector be accredited is federally enforceable.

Testing Requirements

C.5 Performance Testing [326 IAC 3-6]

- (a) All testing shall be performed according to the provisions of 326 IAC 3-6 (Source Sampling Procedures), except as provided elsewhere in this permit, utilizing methods approved by IDEM, OAM.

A test protocol, except as provided elsewhere in this permit, shall be submitted to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Management
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

no later than thirty-five (35) days prior to the intended test date. The Permittee shall submit a notice of the actual test date to the above address so that it is received at least two weeks prior to the test date.

- (b) All test reports must be received by IDEM, OAM within forty-five (45) days after the completion of the testing. An extension may be granted by the Commissioner, if the source submits to IDEM, OAM, a reasonable written explanation within five (5) days prior to the end of the initial forty-five (45) day period.

Compliance Monitoring Requirements

C.6 Maintenance of Monitoring Equipment

- (a) In the event that a breakdown of the monitoring equipment occurs, a record shall be made of the times and reasons of the breakdown and efforts made to correct the problem. To the extent practicable, supplemental or intermittent monitoring of the parameter should be implemented at intervals no less frequent than required in Section D of this permit until such time as the monitoring equipment is back in operation. In the case of continuous monitoring, supplemental or intermittent monitoring of the parameter should be implemented at intervals no less than one (1) hour until such time as the continuous monitor is back in operation.
- (b) The Permittee shall install, calibrate, quality assure, maintain, and operate all necessary monitors and related equipment. In addition, prompt corrective action shall be initiated whenever indicated.

C.7 Monitoring Methods [326 IAC 3]

Any monitoring or testing performed to meet the applicable requirements of this permit shall be performed according to the provisions of 326 IAC 3, 40 CFR 60, Appendix A, or other approved methods as specified in this permit.

Corrective Actions and Response Steps

C.8 Compliance Monitoring Plan - Failure to Take Response Steps [326 IAC 2-1-3(i)(8)][326 IAC 1-6]

- (a) The Permittee is required to implement a compliance monitoring plan to ensure that reasonable information is available to evaluate its continuous compliance with applicable requirements. This compliance monitoring plan is comprised of:
- (1) This condition;
 - (2) The Compliance Determination Requirements in Section D of this permit;
 - (3) The Compliance Monitoring Requirements in Section D of this permit;
 - (4) The Record Keeping and Reporting Requirements in Section C (Monitoring Data Availability, General Record Keeping Requirements, and General Reporting Requirements) and in Section D of this permit; and
 - (5) A Compliance Response Plan (CRP) for each compliance monitoring condition of this permit. CRP's shall be submitted to IDEM, OAM upon request and shall be subject to review and approval by IDEM, OAM. The CRP shall be prepared within ninety (90) days after issuance of this permit by the Permittee and maintained on site, and is comprised of :
 - (A) Response steps that will be implemented in the event that compliance related information indicates that a response step is needed pursuant to the requirements of Section D of this permit; and
 - (B) A time schedule for taking such response steps including a schedule for devising additional response steps for situations that may not have been predicted.
- (b) For each compliance monitoring condition of this permit, appropriate response steps shall be taken when indicated by the provisions of that compliance monitoring condition. Failure to perform the actions detailed in the compliance monitoring conditions or failure to take the response steps within the time prescribed in the Compliance Response Plan, shall constitute a violation of the permit unless taking the response steps set forth in the Compliance Response Plan would be unreasonable.
- (c) After investigating the reason for the excursion, the Permittee is excused from taking further response steps for any of the following reasons:
- (1) The monitoring equipment malfunctioned, giving a false reading. This shall be an excuse from taking further response steps providing that prompt action was taken to correct the monitoring equipment.
 - (2) The Permittee has determined that the compliance monitoring parameters established in the permit conditions are technically inappropriate, has previously submitted a request for an administrative amendment to the permit, and such request has not been denied or;

- (3) An automatic measurement was taken when the process was not operating; or
 - (4) The process has already returned to operating within "normal" parameters and no response steps are required.
- (d) Records shall be kept of all instances in which the compliance related information was not met and of all response steps taken. In the event of an emergency, the provisions of 326 IAC 2-7-16 (Emergency Provisions) requiring prompt corrective action to mitigate emissions shall prevail.

C.9 Actions Related to Noncompliance Demonstrated by a Stack Test

- (a) When the results of a stack test performed in conformance with Section C - Performance Testing, of this permit exceed the level specified in any condition of this permit, the Permittee shall take appropriate corrective actions. The Permittee shall submit a description of these corrective actions to IDEM, OAM, within thirty (30) days of receipt of the test results. The Permittee shall take appropriate action to minimize emissions from the affected facility while the corrective actions are being implemented. IDEM, OAM shall notify the Permittee within thirty (30) days, if the corrective actions taken are deficient. The Permittee shall submit a description of additional corrective actions taken to IDEM, OAM within thirty (30) days of receipt of the notice of deficiency. IDEM, OAM reserves the authority to use enforcement activities to resolve noncompliant stack tests.
- (b) A retest to demonstrate compliance shall be performed within one hundred twenty (120) days of receipt of the original test results. Should the Permittee demonstrate to IDEM, OAM that retesting in one-hundred and twenty (120) days is not practicable, IDEM, OAM may extend the retesting deadline. Failure of the second test to demonstrate compliance with the appropriate permit conditions may be grounds for immediate revocation of the permit to operate the affected facility.

Record Keeping and Reporting Requirements

C.10 Emission Statement [326 IAC 2-6]

- (a) The Permittee shall submit an annual emission statement certified pursuant to the requirements of 326 IAC 2-6, that must be received by April 15 of each year and must comply with the minimum requirements specified in 326 IAC 2-6-4. The annual emission statement shall meet the following requirements:
- (1) Indicate actual emissions of criteria pollutants from the source, in compliance with 326 IAC 2-6 (Emission Reporting);
 - (2) Indicate actual emissions of other regulated pollutants from the source, for purposes of Part 70 fee assessment.
- (b) The annual emission statement covers the twelve (12) consecutive month time period starting December 1 and ending November 30. The annual emission statement must be submitted to:

Indiana Department of Environmental Management
Technical Support and Modeling Section, Office of Air Management
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

- (c) The annual emission statement required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAM, on or before the date it is due.

C.11 Monitoring Data Availability

- (a) With the exception of performance tests conducted in accordance with Section C- Performance Testing, all observations, sampling, maintenance procedures, and record keeping, required as a condition of this permit shall be performed at all times the equipment is operating at normal representative conditions.
- (b) As an alternative to the observations, sampling, maintenance procedures, and record keeping of subsection (a) above, when the equipment listed in Section D of this permit is not operating, the Permittee shall either record the fact that the equipment is shut down or perform the observations, sampling, maintenance procedures, and record keeping that would otherwise be required by this permit.
- (c) If the equipment is operating but abnormal conditions prevail, additional observations and sampling should be taken with a record made of the nature of the abnormality.
- (d) If for reasons beyond its control, the operator fails to make required observations, sampling, maintenance procedures, or record keeping, reasons for this must be recorded.
- (e) At its discretion, IDEM may excuse such failure providing adequate justification is documented and such failures do not exceed five percent (5%) of the operating time in any quarter.
- (f) Temporary, unscheduled unavailability of staff qualified to perform the required observations, sampling, maintenance procedures, or record keeping shall be considered a valid reason for failure to perform the requirements stated in (a) above.

C.12 General Record Keeping Requirements

- (a) Records of all required monitoring data and support information shall be retained for a period of at least five (5) years from the date of monitoring sample, measurement, report, or application. These records shall be kept at the source location for a minimum of three (3) years and available upon the request of an IDEM, OAM, representative, for a minimum of three (3) years. The records may be stored elsewhere for the remaining two (2) years as long as they are available upon request. If the Commissioner makes a written request for records to the Permittee, the Permittee shall furnish the records to the Commissioner or local agency within a reasonable time.
- (b) Records of required monitoring information shall include, where applicable:
 - (1) The date, place, and time of sampling or measurements;
 - (2) The dates analyses were performed;
 - (3) The company or entity performing the analyses;
 - (4) The analytic techniques or methods used;
 - (5) The results of such analyses; and
 - (6) The operating conditions existing at the time of sampling or measurement.

- (c) Support information shall include, where applicable:
 - (1) Copies of all reports required by this permit;
 - (2) All original strip chart recordings for continuous monitoring instrumentation;
 - (3) All calibration and maintenance records;
 - (4) Records of preventive maintenance shall be sufficient to demonstrate that improper maintenance did not cause or contribute to a violation of any limitation on emissions or potential to emit. To be relied upon subsequent to any such violation, these records may include, but are not limited to: work orders, parts inventories, and operator's standard operating procedures. Records of response steps taken shall indicate whether the response steps were performed in accordance with the Compliance Response Plan required by Section C - Compliance Monitoring Plan - Failure to take Response Steps, of this permit, and whether a deviation from a permit condition was reported. All records shall briefly describe what maintenance and response steps were taken and indicate who performed the tasks.
- (d) All record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance.

C.13 General Reporting Requirements

- (a) To affirm that the source has met all the compliance monitoring requirements stated in this permit the source shall submit a Quarterly Compliance Monitoring Report. Any deviation from the requirements and the date(s) of each deviation must be reported.
- (b) The report required in (a) of this condition and reports required by conditions in Section D of this permit shall be submitted to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Management
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015
- (c) Unless otherwise specified in this permit, any notice, report, or other submission required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAM, on or before the date it is due.
- (d) Unless otherwise specified in this permit, any quarterly report shall be submitted within thirty (30) days of the end of the reporting period.
- (e) All instances of deviations as described in Section B- Deviations from Permit Requirements Conditions must be clearly identified in such reports.
- (f) Any corrective actions or response steps taken as a result of each deviation must be clearly identified in such reports.
- (g) The first report shall cover the period commencing on the date of issuance of this permit and ending on the last day of the reporting period.

SECTION D.1 FACILITY OPERATION CONDITIONS - Electric Carbonization Furnaces

Four (4) electric carbonization furnaces (ID Nos. ECF-2 through ECF-5), each with a maximum capacity of 2,900 pounds of preforms of brake discs per batch at a maximum rate of 91 batches per year. ECF-2 and ECF-3 are both controlled by one (1) natural gas fired thermal oxidizer (ID No. TO-1), rated at 1.5 million (MM) Btu per hr, exhausting through one (1) stack (ID No. 470. ECF-4 and ECF-5 are both controlled by one (1) natural gas fired thermal oxidizer (ID No. TO-2), rated at 1.5 MMBtu per hour, exhausting through one (1) stack (ID No. 471).

Emission Limitations and Standards

D.1.1 BACT Condition [326 IAC 8-1-6]

Each thermal oxidizer shall operate at all times that the corresponding electric carbonization furnaces are operated. When operating, the thermal incinerators shall maintain a minimum 90% overall destruction of the volatile organic compound (VOC).

D.1.2 Preventive Maintenance Plan [326 IAC 1-6-3]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for this facility and control devices.

Compliance Determination Requirements

D.1.3 Testing Requirements [326 IAC 2-1-3]

Compliance stack tests shall be performed for VOC emissions from each of the two (2) sets of electric carbonization furnaces (ID Nos. ECF-2 and ECF-3, and ECF-4 and ECF-5) with each set of two (2) furnaces controlled by one (1) 1.5 MMBtu per hour natural gas fired thermal oxidizer, within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up. The tests on the electric carbonization furnaces shall be performed before and after control to confirm the control efficiency of the thermal oxidizer. These tests shall be performed according to 326 IAC 3-6 (Source Sampling Procedures) using the methods specified in the rule or as approved by the Commissioner. In addition to these requirements, IDEM may require compliance testing when necessary to determine if the facility is in compliance.

Compliance Monitoring Requirements

D.1.4 Monitoring

To assure compliance with Condition D.1.1, the thermal incinerators shall maintain a minimum operating temperature of 1,600° F until the minimum temperature, fan amperage and duct velocity necessary to maintain a minimum 90% overall destruction of the volatile organic compound (VOC) is determined in the compliance tests (described in Operation Condition D.1.3). A continuous monitoring system shall be installed and operated to monitor and record the operating temperature. This system shall be accurate to ± 5.0 percent.

Record Keeping and Reporting Requirements

D.1.5 Record Keeping Requirements

- (a) To document compliance with Condition D.1.1, the Permittee shall maintain a log of daily thermal incinerator temperatures, and those additional inspections prescribed by the Preventive Maintenance Plan.
- (b) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

SECTION D.2 FACILITY OPERATION CONDITIONS - CVD Units

Twenty (20) chemical vapor deposition (CVD) units, also known as carbon vapor deposition units (ID Nos. CVD-1 through CVD-20). Each of units CVD-1 and CVD-2 has a batch maximum capacity of 300 pounds per day of brake disks, and a maximum material input rate of 600 standard cubic foot per hour (scfh) of natural gas, 150 scfh of nitrogen gas, and 40 scfh of propane gas throughout the soak phase of each cycle; and each of units CVD-3 through CVD-20 has a batch maximum capacity of 1,000 pounds per day of brake disks, and a maximum material input rate of 7,000 scfh of natural gas, 670 scfh of nitrogen gas, and 500 scfh of propane gas throughout the soak phase of each cycle. The exhaust gas from each CVD is collected in a pressurized storage vessel, PV-1, for combustion by turbine for VOC control. (CVD-14 was originally permitted in CP-141-8117-00005, issued May 20, 1997.)

Emission Limitations and Standards

D.2.1 BACT Condition [326 IAC 8-1-6]

Gas fired turbines have been accepted as BACT for control of the VOC emissions from the CVD units, and all exhaust process gas from each CVD unit shall be collected in the pressurized storage vessel and combusted in the turbines with a maximum VOC emission rate of 0.0344 pounds of VOC per million (MM) Btu of process gas burned, not to exceed 0.3 pounds of VOC per hour per turbine.

D.2.2 Preventive Maintenance Plan [326 IAC 1-6-3]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for this facility and any control devices.

Compliance Determination Requirements

D.2.3 Testing Requirements [326 IAC 2-1-3]

- (a) Compliance stack tests shall be performed from a representative selection of the CVD units (ID Nos. CVD-1 through CVD-20) during the period between 90 days and 120 days after issuance of this permit, using a test protocol determined in conjunction with the IDEM OAM Compliance Data Section.
- (b) The compliance tests shall be performed for the following pollutants to demonstrate the capture efficiency of the collection and distribution system for the exhaust process gas, to establish emission factors for periods of uncontrolled emissions during malfunction, and to obtain information to ensure public health is protected:

Opacity, PM, PM-10, NO_x, CO, and speciated VOCs to include acetylene, benzene, ethene, naphthalene, propyne, styrene, and toluene.
- (c) Compliance with the VOC limit specified in Condition D.2.1 shall be determined by performance tests conducted on the turbines in accordance with Section C - Performance Testing. Inlet and outlet stack testing for VOC is required for the turbines, see sections D.3.4 and D.4.4. In addition to these requirements, IDEM may require compliance testing when necessary to determine if the facility is in compliance.

Compliance Monitoring Requirements

There are no applicable compliance monitoring requirements for these facilities.

Record Keeping and Reporting Requirements

There are no applicable record keeping requirements for these facilities.

SECTION D.3 FACILITY OPERATION CONDITIONS - Turbines GT-1 through GT-5

Five (5) process gas fired turbines, ID Nos. GT-1 through GT-5, with water-injected low-NO_x burners, each with 8.71 million (MM) Btu per hour heat input capacity, to control volatile organic compound emissions from CVD units. Natural gas will be fired in the turbines for purging and startup. The turbines exhaust through stacks numbered SGT-1 through SGT-5, respectively. (Turbines GT-1 through GT-5 were originally permitted with dry, low-NO_x burners in CP-141-7277-00005, issued March 26, 1997.)

Emission Limitations and Standards

D.3.1 PSD Minor Limit of Potential Emissions [326 IAC 2-2] [40 CFR 52.21]

- (a) Pursuant to CP-141-7277-00005, issued on March 26, 1997, the input of process gas to the five (5) turbines identified as GT-1 through GT-5 shall be limited to 29.843 million cubic foot (MMCF) total per month with a maximum NO_x emission rate of 0.3 pounds of NO_x per MMBtu of process gas. This limitation is necessary to limit the potential to emit of NO_x to no greater than 3.25 tons per month. This limit makes 326 IAC 2-2 (Prevention of Significant Deterioration) not applicable. For purposes of determining compliance based on NO_x emissions, each MMCF of natural gas burned shall be equivalent to 1.378 MMCF of process gas.
- (b) The turbines shall use water injection to reduce NO_x emissions. The injection ratio shall be maintained at 0.7 water/fuel, until an injection ratio is determined in the compliance tests (described in Operation Condition D.3.4). The water/fuel injection ratio shall be used as a surrogate parameter for NO_x emission monitoring.

D.3.2 BACT Condition [326 IAC 8-1-6]

The process gas fired turbines have been accepted as BACT for control of the VOC emissions from the CVD units, and all exhaust process gas from each CVD unit shall be collected in the pressurized storage vessel and combusted in the turbines with a maximum VOC emission rate of 0.0344 pounds of VOC per MMBtu, not to exceed 0.3 pounds of VOC per hour per turbine. With the fuel input limit detailed in the above condition, this is equivalent to a maximum VOC emission rate of 4.47 tons per year from turbines GT-1 through GT-5.

D.3.3 Preventive Maintenance Plan [326 IAC 1-6-3]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for this facility and any control devices.

Compliance Determination Requirements

D.3.4 Testing Requirements [326 IAC 2-1-3]

- (a) Compliance stack tests shall be performed for NO_x and inlet and outlet VOC emissions from three (3) of the five (5) 8.71 MMBtu per hour gas fired turbines, (ID Nos. GT-1 through GT-5), within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up. If the testing on one of the five (5) turbines (ID Nos. GT-1 through GT-5) fails, compliance stack testing shall be performed again on that one (1) turbine as well as on the two (2) turbines previously not tested.

- (b) Inlet and outlet VOC tests on the turbines shall be performed to determine the efficiency of the turbines in controlling the VOC emissions from the CVD units. VOC and NO_x emission tests shall be conducted while the turbine being tested is operating at ninety-five percent (95%) to one-hundred percent (100%) of its operating capacity. NO_x emission tests shall also be conducted while the turbine being tested is operating at approximately seventy-five percent (75%) and fifty percent (50%) of its operating capacity. These tests shall be performed according to 326 IAC 3-6 (Source Sampling Procedures) using the methods specified in the rule or as approved by the Commissioner.
- (c) The water injection rate to the burners, exhaust stack temperature, and rate of energy produced by the turbine will also be monitored throughout each stack test to determine surrogate parameters for emission monitoring. In addition to these requirements, IDEM may require compliance testing when necessary to determine if the facility is in compliance.

Compliance Monitoring Requirements

D.3.5 Monitoring

To assure compliance with Condition D.3.1, a continuous monitoring system shall be installed and operated to monitor and record the fuel consumption and the ratio of water to fuel being fired in each turbine. This system shall be accurate to ± 5.0 percent.

Record Keeping and Reporting Requirements

D.3.6 Record Keeping Requirements

- (a) To document compliance with Condition D.3.1, the Permittee shall maintain a log of input usage of process gas and natural gas to turbines GT-1 through GT-5, the fuel/water injection ratio, and those additional inspections prescribed by the Preventive Maintenance Plan.
- (b) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

D.3.7 Reporting Requirements

A quarterly summary of the information to document compliance with Condition D.3.1 shall be submitted to the address listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported. These reports shall include input usage of process gas and natural gas to turbines GT-1 through GT-5.

SECTION D.4 FACILITY OPERATION CONDITIONS - Turbines GT-6 through GT-8

Three (3) process gas fired turbines, identified as GT-6 through GT-8, with water-injected low-NO_x burners, each with 8.71 million (MM) Btu per hour heat input capacity, to control volatile organic compound emissions from CVD units. Natural gas will be fired in the turbines for purging and startup. The turbines will exhaust through stacks SGT-6 through SGT-8, respectively.

Emission Limitations and Standards

D.4.1 PSD Minor Limit of Potential Emissions [326 IAC 2-2] [40 CFR 52.21]

- (a) The maximum NO_x emission rate from each of the three (3) process gas fired turbines identified as GT-6 through GT-8 shall be 0.3 pounds of NO_x per million (MM) Btu of process gas input to the turbines. This voluntary limit restricts the potential to emit of NO_x to 34.33 tons per 365 consecutive day period. This limit makes 326 IAC 2-2 (Prevention of Significant Deterioration) not applicable. For purposes of determining compliance based on NO_x emissions, each million cubic foot (MMCF) of natural gas burned shall be equivalent to 1.378 MMCF of process gas.
- (b) The turbines shall use water injection to reduce NO_x emissions. The injection ratio shall be maintained at 0.7 water/fuel, until an injection ratio is determined in the compliance tests (described in Operation Condition D.4.4). The water/fuel injection ratio shall be used as a surrogate parameter for NO_x emission monitoring.

D.4.2 BACT Condition [326 IAC 8-1-6]

The process gas fired turbines have been accepted as BACT for control of the VOC emissions from the CVD units, and all exhaust process gas from each CVD unit shall be collected in the pressurized storage vessel and combusted in the turbines with a maximum VOC emission rate of 0.0344 pounds of VOC per MMBtu, not to exceed 0.3 pounds of VOC per hour per turbine. This is equivalent to a maximum VOC emission rate of 3.94 tons per year of VOC from turbines GT-6 through GT-8.

D.4.3 Preventive Maintenance Plan [326 IAC 1-6-3]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for this facility and any control devices.

Compliance Determination Requirements

D.4.4 Testing Requirements [326 IAC 2-1-3]

- (a) Compliance stack tests shall be performed for NO_x and inlet and outlet VOC emissions from one (1) of the three (3) 8.71 MMBtu per hour gas fired turbines, (ID Nos. GT-6 through GT-8), within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up. If the testing on one of the three (3) turbines (ID Nos. GT-6 through GT-8) fails, compliance stack testing shall be performed again on that one (1) turbine as well as on the two (2) turbines previously not tested.
- (b) Inlet and outlet VOC tests on the turbines shall be performed to determine the efficiency of the turbines in controlling the VOC emissions from the CVD units. VOC and NO_x emission tests shall be conducted while the turbine being tested is operating at ninety-five percent (95%) to one-hundred percent (100%) of its operating capacity. NO_x emission tests shall also be conducted while the turbine being tested is operating at approximately seventy-five percent (75%) and fifty percent (50%) of its operating capacity. These tests shall be performed according to 326 IAC 3-6 (Source Sampling Procedures) using the methods specified in the rule or as approved by the Commissioner.

- (c) The water injection rate to the burners, exhaust stack temperature, and rate of energy produced by the turbine will also be monitored throughout each stack test to determine surrogate parameters for emission monitoring. In addition to these requirements, IDEM may require compliance testing when necessary to determine if the facility is in compliance.

Compliance Monitoring Requirements

D.4.5 Monitoring

To assure compliance with Condition D.4.1, a continuous monitoring system shall be installed and operated to monitor and record the fuel consumption and the ratio of water to fuel being fired in each turbine. This system shall be accurate to ± 5.0 percent.

Record Keeping and Reporting Requirements

D.4.6 Record Keeping Requirements

- (a) To document compliance with Condition D.4.1, the Permittee shall maintain a log of the fuel/water injection ratio, and of any inspections prescribed by the Preventive Maintenance Plan.
- (b) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

D.4.7 Reporting Requirements

There are no applicable reporting requirements for turbines GT-6 through GT-8.

**Indiana Department of Environmental Management
 Office of Air Management
 Compliance Data Section**

Quarterly Report

Company Name: AlliedSignal, Inc., Aircraft Landing Systems
 Location: 3520 Westmoor Street, South Bend, Indiana 46628-1373
 Permit No.: CP-141-8761-00005
 Facilities: Five (5) turbines (ID Nos. GT-1 through GT-5) with water-injected low NO_x burners, fired with process gas from CVD units
 Pollutant: NO_x
 Limit: 29.843 MMCF/month of input gas; each MMCF of natural gas burned is equivalent to 1.378 MMCF of process gas for compliance purposes

Year: _____

Month	process gas usage (MMCF/month)	natural gas usage (MMCF/month)	process gas equivalent (1.378 x natural gas usage)	Total process gas usage this month (MMCF/month)	process gas LIMIT (MMCF/month)
					29.843
					29.843
					29.843

Submitted by: _____

Title/Position: _____

Signature: _____

Date: _____

MALFUNCTION REPORT

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR MANAGEMENT
FAX NUMBER - 317 233-5967**

**This form should only be used to report malfunctions applicable to Rule 326 IAC 1-6
and to qualify for the exemption under 326 IAC 1-6-4.**

THIS FACILITY MEETS THE APPLICABILITY REQUIREMENTS BECAUSE: IT HAS POTENTIAL TO EMIT 25 LBS/HR PARTICULATES ? _____, 100 LBS/HR VOC ? _____, 100 LBS/HR SULFUR DIOXIDE ? _____ OR 2000 LBS/HR OF ANY OTHER POLLUTANT ? _____ EMISSIONS FROM MALFUNCTIONING CONTROL EQUIPMENT OR PROCESS EQUIPMENT CAUSED EMISSIONS IN EXCESS OF APPLICABLE LIMITATION _____.

THIS MALFUNCTION RESULTED IN A VIOLATION OF: 326 IAC _____ OR, PERMIT CONDITION # _____ AND/OR PERMIT LIMIT OF _____

THIS INCIDENT MEETS THE DEFINITION OF 'MALFUNCTION' AS LISTED ON REVERSE SIDE ? Y N

THIS MALFUNCTION IS OR WILL BE LONGER THAN THE ONE (1) HOUR REPORTING REQUIREMENT ? Y N

COMPANY: _____ PHONE NO. () _____

LOCATION: (CITY AND COUNTY) _____
PERMIT NO. _____ AFS PLANT ID: _____ AFS POINT ID: _____ INSP: _____
CONTROL/PROCESS DEVICE WHICH MALFUNCTIONED AND REASON: _____

DATE/TIME MALFUNCTION STARTED: ____ / ____ / 19____ _____ AM / PM

ESTIMATED HOURS OF OPERATION WITH MALFUNCTION CONDITION: _____

DATE/TIME CONTROL EQUIPMENT BACK-IN SERVICE ____ / ____ / 19____ _____ AM/PM

TYPE OF POLLUTANTS EMITTED: TSP, PM-10, SO2, VOC, OTHER: _____

ESTIMATED AMOUNT OF POLLUTANT EMITTED DURING MALFUNCTION: _____

MEASURES TAKEN TO MINIMIZE EMISSIONS: _____

REASONS WHY FACILITY CANNOT BE SHUTDOWN DURING REPAIRS:

CONTINUED OPERATION REQUIRED TO PROVIDE ESSENTIAL* SERVICES: _____
CONTINUED OPERATION NECESSARY TO PREVENT INJURY TO PERSONS: _____
CONTINUED OPERATION NECESSARY TO PREVENT SEVERE DAMAGE TO EQUIPMENT: _____
INTERIM CONTROL MEASURES: (IF APPLICABLE) _____

MALFUNCTION REPORTED BY: _____

TITLE: _____

(SIGNATURE IF FAXED)

MALFUNCTION RECORDED BY: _____ DATE: _____ TIME: _____

**Please note - This form should only be used to report malfunctions
applicable to Rule 326 IAC 1-6 and to qualify for
the exemption under 326 IAC 1-6-4.**

326 IAC 1-6-1 Applicability of rule

Sec. 1. The requirements of this rule (326 IAC 1-6) shall apply to the owner or operator of any facility which has the potential to emit twenty-five (25) pounds per hour of particulates, one hundred (100) pounds per hour of volatile organic compounds or SO₂, or two thousand (2,000) pounds per hour of any other pollutant; or to the owner or operator of any facility with emission control equipment which suffers a malfunction that causes emissions in excess of the applicable limitation.

326 IAC 1-2-39 “Malfunction” definition

Sec. 39. Any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. (Air Pollution Control Board; 326 IAC 1-2-39; filed Mar 10, 1988, 1:20 p.m. : 11 IR 2373)

***Essential services** are interpreted to mean those operations, such as, the providing of electricity by power plants. Continued operation solely for the economic benefit of the owner or operator shall not be sufficient reason why a facility cannot be shutdown during a control equipment shutdown.

If this item is checked on the front, please explain rationale:

Indiana Department of Environmental Management Office of Air Management

Technical Support Document (TSD) for New Construction and Operation

Source Background and Description

Source Name: AlliedSignal, Inc.
Source Location: 3520 Westmoor Street, South Bend, Indiana 46628-1373
County: St. Joseph
Construction Permit No.: CP-141-8761-00005
SIC Code: 3728
Permit Reviewer: Vickie Cordell

The Office of Air Management (OAM) has reviewed an application from AlliedSignal, Inc. relating to the construction and operation of a modification to an existing aircraft wheel and brake manufacturing operation, consisting of the addition of the following equipment:

- (a) Four (4) electric carbonization furnaces, each with a maximum capacity of 2,900 pounds of preforms of brake discs per batch at a maximum rate of 91 batches per year, including:
 - (1) Two (2) previously permitted electric carbonization furnaces (ID Nos. ECF-2 and ECF-3), both controlled by one (1) natural gas fired thermal oxidizer (ID No. TO-1) rated at 1.5 million (MM) Btu per hour, exhausting through one (1) stack (ID No. 470). (Previously permitted in CP-141-8117-00005, issued May 20, 1997, as two electric carbonization furnaces with a 1.0 MMBtu per hour natural gas fired thermal afterburner for VOC control.)
 - (2) Two (2) new electric carbonization furnaces (ID Nos. ECF-4 and ECF-5), both controlled by one (1) natural gas fired thermal oxidizer (ID No. TO-2) rated at 1.5 MMBtu per hour, exhausting through one (1) stack (ID No. 471);
- (b) Twenty (20) chemical vapor deposition (CVD) units, also known as carbon vapor deposition units, including:
 - (1) Two (2) existing, previously unpermitted CVD units (ID Nos. CVD-1 and CVD-2), each with a batch maximum capacity of 300 pounds per day of brake disks, and a maximum material input rate of 600 standard cubic foot per hour (scfh) of natural gas, 150 scfh of nitrogen gas, and 40 scfh of propane gas throughout the soak phase of each cycle.
 - (2) Eleven (11) existing, previously unpermitted CVD units (ID Nos. CVD-3 through CVD-13), each with a batch maximum capacity of 1,000 pounds per day of brake disks, and a maximum material input rate of 7,000 scfh of natural gas, 670 scfh of nitrogen gas, and 500 scfh of propane gas throughout the soak phase of each cycle.
 - (3) One (1) previously permitted CVD unit (ID No. CVD-14), with a batch maximum capacity of 1,000 pounds per day of brake disks, and a maximum material input rate of 7,000 scfh of natural gas, 670 scfh of nitrogen gas, and 500 scfh of propane gas throughout the soak phase of each cycle. (Previously permitted in CP-141-8117-00005, issued May 20, 1997.)

- (4) Six (6) new CVD units (ID Nos. CVD-15 through CVD-20), each with a batch maximum capacity of 1,000 pounds per day of brake disks, and a maximum material input rate of 7,000 scfh of natural gas, 670 scfh of nitrogen gas, and 500 scfh of propane gas throughout the soak phase of each cycle.

The exhaust gas from each CVD is collected in a pressurized storage vessel (ID No. PV-1) for combustion by turbine for VOC control.

- (c) Eight (8) process gas fired turbines to control VOC emissions from the CVD units and to generate electricity, each with 8.71 million (MM) Btu heat input capacity with water-injected low-NO_x burners, including:
 - (1) Five (5) previously permitted process gas fired turbines, ID Nos. GT-1 through GT-5. The turbines exhaust through stacks numbered SGT-1 through SGT-5, respectively. (Turbines GT-1 through GT-5 were originally permitted with dry, low-NO_x burners in CP-141-7277-00005, issued March 26, 1997.)
 - (2) Three (3) new process gas fired turbines, identified as GT-6 through GT-8. The turbines exhaust through stacks numbered SGT-6 through SGT-8, respectively.

Natural gas will be fired in each of the turbines for purging and startup.

Prior Permit Conditions Superseded

The terms and conditions of this permit incorporate all the current applicable requirements for the two (2) electric carbonization furnaces identified as ECF-2 and ECF-3, the one (1) chemical vapor deposition unit identified as CVD-14, and the five (5) process gas fired turbines identified as GT-1 through GT-5, and supersede all terms and conditions in CP-141-7277-00005, issued March 26, 1997, and CP-141-8117-00005, issued May 20, 1997. All terms and conditions in CP-141-7277-00005 and CP-141-8117-00005 are no longer in effect.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (°F)
SGT-1	Existing Turbine	16	1	6,480	925
SGT-2	Existing Turbine	16	1	6,480	925
SGT-3	Existing Turbine	16	1	6,480	925
SGT-4	Existing Turbine	16	1	6,480	925
SGT-5	Existing Turbine	16	1	6,480	925
471	Thermal Oxidizer	55	1	1,151	1750
SGT-6	New Turbine	16	2	6,480	925
SGT-7	New Turbine	16	2	6,480	925
SGT-8	New Turbine	16	2	6,480	925

Enforcement Issue

IDEM is aware that the thirteen (13) existing CVD units, identified as CVD-1 through CVD-13 have been constructed and operated prior to receipt of the proper permit. IDEM is reviewing this matter and will take appropriate action. This proposed permit is intended to satisfy the requirements of the construction permit rules.

Recommendation

The staff recommends to the Commissioner that the construction and operation be approved. This recommendation is based on the following facts and conditions:

Information, unless otherwise stated, used in this review was derived from the application and additional information submitted by the applicant.

A complete application for the purposes of this review was received on July 2, 1997.

Emissions Calculations

See Appendix A (Emissions Calculation Spreadsheets) for detailed calculations (5 pages).

Total Potential and Allowable Emissions

Indiana Permit Allowable Emissions Definition (after compliance with applicable rules, based on 8,760 hours of operation per year at rated capacity):

Pollutant	Allowable Emissions (tons/year)	Potential Emissions (tons/year)
Particulate Matter (PM)	12.9	12.9
Particulate Matter (PM10)	12.9	12.9
Sulfur Dioxide (SO ₂)	1.2	1.2
Volatile Organic Compounds (VOC)	4026.1	4026.1
Carbon Monoxide (CO)	30.8	30.8
Nitrogen Oxides (NO _x)	38.2	38.2
Single Hazardous Air Pollutant (HAP)	negligible	negligible
Combination of HAPs	negligible	negligible

(NOTE: Emissions from the previously permitted turbines are not included in this table.)

Allowable emissions (as defined in the Indiana Rule) of volatile organic compounds (VOC), carbon monoxide (CO), and of nitrogen oxides (NO_x) are greater than 25 tons per year. Therefore, pursuant to 326 IAC 2-1, Sections 1 and 3, a construction permit is required.

County Attainment Status

- (a) Volatile organic compounds (VOC) and oxides of nitrogen (NO_x) are precursors for the formation of ozone. Therefore, VOC and NO_x emissions are considered when evaluating the rule applicability relating to the ozone standards. St. Joseph County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NO_x emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

- (b) St. Joseph County has been classified as attainment or unclassifiable for PM₁₀, SO₂, and CO. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.
- (c) The portion of St. Joseph County in which the source is located has been classified as nonattainment for PM. Therefore, these emissions were reviewed pursuant to the requirements for Emission Offset, 326 IAC 2-3.
- (d) Fugitive Emissions
 Since this type of operation is not one of the 28 listed source categories under 326 IAC 2-2 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive PM emissions are not counted toward determination of PSD and Emission Offset applicability.

Source Status

Existing Source PSD and Part 70 Definition (estimated actual emissions from the AIRS Facility Quick Look Report, dated July 24, 1997):

Pollutant	Emissions (ton/yr)
PM	0.8
PM ₁₀	0.0
SO ₂	0.0
VOC	678.0
CO	0.0
NO _x	0.0

This existing source is a major stationary source because at least one attainment regulated pollutant is emitted at a rate of 250 tons per year.

Proposed Modification

PTE from the proposed modification (based on 8,760 hours of operation per year at rated capacity including enforceable emission control):

Pollutant	PM (ton/yr)	PM ₁₀ (ton/yr)	SO ₂ (ton/yr)	VOC (ton/yr)	CO (ton/yr)	NO _x (ton/yr)
Proposed Modification	12.9	12.9	1.2	7.0	30.8	38.2
Contemporaneous Increases	----	----	----	----	----	----
Contemporaneous Decreases	----	----	----	----	----	----
Net Emissions	12.9	12.9	1.2	7.0	30.8	38.2
PSD or Offset Significant Level	25	15	40	40	100	40

- (a) This modification to an existing major stationary source is not major because the PM₁₀, SO₂, VOC, CO, and NO_x emissions increase is less than the PSD significant levels. Therefore, pursuant to 326 IAC 2-2, and 40 CFR 52.21, the PSD requirements do not apply.
- (b) This modification to an existing major stationary source is not major because the PM emissions increase is less than the Emission Offset significant levels. Therefore, pursuant to 326 IAC 2-3, the Emission Offset requirements do not apply.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This existing source has submitted their Part 70 (T-141-7442-00005) application on December 10, 1996. The equipment being reviewed under this permit shall be incorporated in the submitted Part 70 application.

Federal Rule Applicability

There are no New Source Performance Standards (326 IAC 12) and 40 CFR Part 63 applicable to this facility.

40 CFR Part 60.330, Subpart GG, Standards of Performance for Stationary Gas Turbines

This modification is not subject to the provisions of 40 CFR Part 60.330, Subpart GG, because the gas fired turbines each have a heat input capacity less than 10.7 gigajoules per hour (10 MMBtu per hour).

State Rule Applicability - Entire Source

326 IAC 2-6 (Emission Reporting)

This source is subject to 326 IAC 2-6 (Emission Reporting), because it has the potential to emit more than one hundred (100) tons per year of VOC. Pursuant to this rule, the owner/operator of the source must annually submit an emission statement for the source. The annual statement must be received by April 15 of each year and contain the minimum requirement as specified in 326 IAC 2-6-4.

326 IAC 5-1-2 (Visible Emissions Limitations)

This source, which is located in St. Joseph County north of Kern Road and east of Pine Road, is subject to 326 IAC 5-1-2 (Visible Emission Limitations) which limits visible emissions from a source or facility. Pursuant to 326 IAC 5-1-2, except as provided in 326 IAC 5-1-3 (Temporary Exemptions), visible emissions shall meet the following, unless otherwise stated in this permit:

- (a) Visible emissions shall not exceed an average of thirty percent (30%) opacity in twenty-four (24) consecutive readings, as determined in 326 IAC 5-1-4.
- (b) Visible emissions shall not exceed sixty percent (60%) opacity for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) in a six (6) hour period.

State Rule Applicability - Individual Facilities

326 IAC 2-1-3 (Construction and Operating Permit Requirements)

- (a) Compliance stack tests shall be performed for VOC emissions from each of the two (2) sets of electric carbonization furnaces (ID Nos. ECF-2 and ECF-3, and ECF-4 and ECF-5) with each set of two (2) furnaces controlled by one (1) 1.5 MMBtu per hour natural gas fired thermal oxidizer, within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up. The tests on the electric carbonization furnaces shall be performed before and after control to confirm the control efficiency of the thermal oxidizer. These tests shall be performed according to 326 IAC 3-6 (Source Sampling Procedures) using the methods specified in the rule or as approved by the Commissioner.
- (b) Compliance stack tests shall be performed for NO_x and inlet and outlet VOC emissions from three (3) of the five (5) 8.71 MMBtu per hour gas fired turbines, (ID Nos. GT-1 through GT-5), within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up. If the testing on one of the five (5) turbines (ID Nos. GT-1 through GT-5) fails, compliance stack testing shall be performed again on that one (1) turbine as well as on the two (2) turbines previously not tested.

Inlet and outlet VOC tests on the turbines shall be performed to determine the efficiency of the turbines in controlling the VOC emissions from the CVD units. VOC and NO_x emission tests shall be conducted while the turbine being tested is operating at ninety-five percent (95%) to one-hundred percent (100%) of its operating capacity. NO_x emission tests shall also be conducted while the turbine being tested is operating at approximately seventy-five percent (75%) and fifty percent (50%) of its operating capacity. These tests shall be performed according to 326 IAC 3-6 (Source Sampling Procedures) using the methods specified in the rule or as approved by the Commissioner. The water injection rate to the burners, exhaust stack temperature, and rate of energy produced by the turbine will also be monitored throughout each stack test to determine surrogate parameters for emission monitoring

- (c) Compliance stack tests shall be performed for NO_x and inlet and outlet VOC emissions from one (1) of the three (3) 8.71 MMBtu per hour gas fired turbines, (ID Nos. GT-6 through GT-8), within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up. If the testing on one of the three (3) turbines (ID Nos. GT-6 through GT-8) fails, compliance stack testing shall be performed again on that one (1) turbine as well as on the two (2) turbines previously not tested.

Inlet and outlet VOC tests on the turbines shall be performed to determine the efficiency of the turbines in controlling the VOC emissions from the CVD units. VOC and NO_x emission tests shall be conducted while the turbine being tested is operating at ninety-five percent (95%) to one-hundred percent (100%) of its operating capacity. NO_x emission tests shall also be conducted while the turbine being tested is operating at approximately seventy-five percent (75%) and fifty percent (50%) of its operating capacity. These tests shall be performed according to 326 IAC 3-6 (Source Sampling Procedures) using the methods specified in the rule or as approved by the Commissioner. The water injection rate to the burners, exhaust stack temperature, and rate of energy produced by the turbine will also be monitored throughout each stack test to determine surrogate parameters for emission monitoring.

326 IAC 2-2 (Prevention of Significant Deterioration (PSD) Requirements)

Pursuant to CP-141-7277-00005, issued on March 26, 1997, the input of process gas to the five (5) turbines identified as GT-1 through GT-5 shall be limited to 29.843 million cubic foot (MMCF) total per month with a maximum NO_x emission rate of 0.3 pounds of NO_x per MMBtu of process gas. This limitation is necessary to limit the potential to emit of NO_x to no greater than 3.25 tons per month. This limit makes 326 IAC 2-2 (Prevention of Significant Deterioration) not applicable. For purposes of determining compliance based on NO_x emissions, each MMCF of natural gas burned shall be equivalent to 1.378 MMCF of process gas.

The maximum NO_x emission rate from each of the three (3) process gas fired turbines identified as GT-6 through GT-8 shall be 0.3 pounds of NO_x per million (MM) Btu of process gas input to the turbines. This voluntary limit restricts the potential to emit of NO_x to 34.33 tons per 365 consecutive day period. This limit makes 326 IAC 2-2 (Prevention of Significant Deterioration) not applicable. For purposes of determining compliance based on NO_x emissions, each million cubic foot (MMCF) of natural gas burned shall be equivalent to 1.378 MMCF of process gas.

The turbines shall use water injection to reduce NO_x emissions. The fuel/water injection ratio shall be used as a surrogate parameter for NO_x emission monitoring. To assure compliance, a continuous monitoring system shall be installed and operated to monitor and record the fuel consumption and the ratio of water to fuel being fired in each turbine. This system shall be accurate to ±5.0 percent.

326 IAC 6-1-2 (Nonattainment Area Particulate Limitations)

This source is not subject to the provisions of 326 IAC 6-1-2 because although the source is located in St. Joseph County, it does not have specific emission limits listed in 326 IAC 6-1-18, and it does not have the potential to emit 100 tons or more of PM per year or have actual emissions of 10 tons or more of PM per year.

326 IAC 8-1-6 (New Facilities, General Reduction Requirements)

This rule is applicable to electric carbonization furnaces ECF-2 through ECF-5, and to CVD units CVD-3 through CVD-20 because these units were or will be constructed after January 1, 1980, and the potential uncontrolled emissions from each unit is greater than 25 tons per year.

Pursuant to 326 IAC 8-1-6, the thermal oxidizers have been accepted as BACT for control of VOC emissions from the electric carbonization furnaces. The thermal oxidizer shall operate at all times that the two (2) electric carbonization furnaces (ID Nos. ECF-4 and ECF-5) are operated. When operating, the thermal incinerator shall maintain a minimum operating temperature of 1,600° F or a temperature, fan amperage and duct velocity determined in the compliance tests (described in Operation Condition D.1.3) to maintain a minimum 90% overall destruction of the volatile organic compound (VOC).

The process gas fired turbines have been accepted as BACT for control of the VOC emissions from the CVD units. All exhaust process gas from each CVD unit shall be collected in the pressurized storage vessel and combusted in one or more of the turbines.

CVD-1 and CVD-2 were constructed prior to January 1, 1980, and are therefore not subject to this rule. However, the source plans to apply for redesignation as a minor PSD source once all controls are implemented. The control of the exhaust process gas from each of the CVDs is established as an enforceable condition.

Air Toxic Emissions

Indiana presently requests applicants to provide information on emissions of the 187 hazardous air pollutants set out in the Clean Air Act Amendments of 1990. These pollutants are either carcinogenic or otherwise considered toxic and are commonly used by industries. They are listed as air toxics on the Office of Air Management (OAM) Construction Permit Application Form Y.

None of these listed air toxics will be emitted in quantifiable levels from this proposed construction.

Conclusion

The construction of this modification to an existing aircraft wheel and brake manufacturing operation will be subject to the conditions of the attached proposed **Construction Permit No. CP-141-8761-00005**.

Indiana Department of Environmental Management Office of Air Management

Addendum to the Technical Support Document for New Construction and Operation

Source Name: AlliedSignal, Inc.
Source Location: 3520 Westmor Street, South Bend, Indiana 46628
County: St. Joseph
Construction Permit No.: CP-141-8761-00005
SIC Code: 3728
Permit Reviewer: Vickie Cordell

On March 25, 1998, the Office of Air Management (OAM) had a notice published in the South Bend Tribune, South Bend, Indiana, stating that AlliedSignal, Inc. had applied for a construction permit to construct and operate a modification to an existing aircraft wheel and brake manufacturing operation with control. The notice also stated that OAM proposed to issue a permit for this installation and provided information on how the public could review the proposed permit and other documentation. Finally, the notice informed interested parties that there was a period of thirty (30) days to provide comments on whether or not this permit should be issued as proposed.

On March 25, 1998, a telephone call was received from Mr. Michael Murray of South Bend with comments regarding the operation and the permitting process.

Comment 1:

Could the CVD units be responsible for a "heavy" odor that is occasionally emitted from the west side of the large building at AlliedSignal? This is the area where a new addition was just built. The odor is more often detectable at night, and was slightly detectable the morning of the call.

Response 1:

The CVDs are located in the west part of the building. The OAM inspector, Doug Elliott, reported that he has never noticed an odor associated with the CVD process when he has been there. He has never been to the source at night. In response to the call, he conducted an off-site surveillance of the source on April 1, 1998. The source appeared to be fully operating and no unusual odors were detected.

Comment 2:

The notice in the paper states that the application and draft permit will be available at the (St. Joseph) County Health Department. However, when he tried to view them there in the morning on this date, no one could find them. The people in the office at that time may not have known where to look; he was told that none of the Air (Pollution Control Division) people were in at that time. He was planning to go see the library copy later in the day.

Response 2:

Staff of the OAM Permits Administrative Section confirmed that the copies were sent on Friday, March 20, 1998. The library copy was sent for overnight delivery; the Health Department copy was sent via regular mail but would still have been expected to arrive by Wednesday the 25th.

On April 24, 1998, AlliedSignal, Inc. submitted comments on the proposed construction permit. The summary of the comments and corresponding responses is as follows (changes are highlighted for emphasis):

Comment 1:

In Section A (Source Summary), the last sentence of Section A.2(a)(1) indicates that the rated capacity of the thermal oxidizer used to control ECF-2 and ECF-3 was 1.0 MMBtu/hr. The permit application submitted for these two furnaces indicated that the rated capacity was 1.5 MMBtu/hr, not 1.0 MMBtu/hr. This sentence should be removed from the permit.

Response 1:

The notation was included to clarify that the capacity had been misstated in the original permit, and was now corrected. The description in the Technical Support Document is believed to be sufficient for this purpose. Therefore, condition A.2(a)(1) has been changed on page 5 of the final permit as follows:

- (1) Two (2) previously permitted electric carbonization furnaces (ID Nos. ECF-2 and ECF-3), both controlled by one (1) natural gas fired thermal oxidizer (ID No. TO-1) rated at 1.5 million (MM) Btu per hour, exhausting through one (1) stack (ID No. 470). ~~(Previously permitted in CP-141-8117-00005, issued May 20, 1997, as two electric carbonization furnaces with a 1.0 MMBtu per hour natural gas fired thermal afterburner for VOC control.)~~

The same deletion was made in the equipment description of the corresponding D Section, on page 17 of the final permit as follows:

SECTION D.1 FACILITY OPERATION CONDITIONS - Electric Carbonization Furnaces

Four (4) electric carbonization furnaces (ID Nos. ECF-2 through ECF-5), each with a maximum capacity of 2,900 pounds of preforms of brake discs per batch at a maximum rate of 91 batches per year. ECF-2 and ECF-3 are both controlled by one (1) natural gas fired thermal oxidizer (ID No. TO-1), rated at 1.5 million (MM) Btu per hr, exhausting through one (1) stack (ID No. 470). ECF-4 and ECF-3 are both controlled by one (1) natural gas fired thermal oxidizer (ID No. TO-2), rated at 1.5 MMBtu per hour, exhausting through one (1) stack (ID No. 471). ~~(ECF-2 and ECF-3 were previously permitted in CP-141-8117-00005, issued May 20, 1997, with a 1.0 MMBtu per hour natural gas fired thermal afterburner for VOC control.)~~

Comment 2:

Condition C.12(c)(4) (General Record Keeping Requirements) requires documentation of response steps taken in accordance with a Compliance Response Plan and refers to a condition entitled "Compliance Monitoring Plan - Failure to take Response Steps". There is no such condition in the proposed permit.

Response 2:

The Compliance Monitoring Plan condition was inadvertently omitted from the draft permit. This is a standard condition for sources with potential emissions after control of greater than 100 tons per year. The condition has been inserted on page 12 of the final permit, as follows:

C.8 Compliance Monitoring Plan - Failure to Take Response Steps [326 IAC 2-1-3(i)(8)][326 IAC 1-6]

- (a) The Permittee is required to implement a compliance monitoring plan to ensure that reasonable information is available to evaluate its continuous compliance with applicable requirements. This compliance monitoring plan is comprised of:

- (1) This condition;

- (2) The Compliance Determination Requirements in Section D of this permit;
 - (3) The Compliance Monitoring Requirements in Section D of this permit;
 - (4) The Record Keeping and Reporting Requirements in Section C (Monitoring Data Availability, General Record Keeping Requirements, and General Reporting Requirements) and in Section D of this permit; and
 - (5) A Compliance Response Plan (CRP) for each compliance monitoring condition of this permit. CRP's shall be submitted to IDEM, OAM upon request and shall be subject to review and approval by IDEM, OAM. The CRP shall be prepared within ninety (90) days after issuance of this permit by the Permittee and maintained on site, and is comprised of :
 - (A) Response steps that will be implemented in the event that compliance related information indicates that a response step is needed pursuant to the requirements of Section D of this permit; and
 - (B) A time schedule for taking such response steps including a schedule for devising additional response steps for situations that may not have been predicted.
- (b) For each compliance monitoring condition of this permit, appropriate response steps shall be taken when indicated by the provisions of that compliance monitoring condition. Failure to perform the actions detailed in the compliance monitoring conditions or failure to take the response steps within the time prescribed in the Compliance Response Plan, shall constitute a violation of the permit unless taking the response steps set forth in the Compliance Response Plan would be unreasonable.
- (c) After investigating the reason for the excursion, the Permittee is excused from taking further response steps for any of the following reasons:
- (1) The monitoring equipment malfunctioned, giving a false reading. This shall be an excuse from taking further response steps providing that prompt action was taken to correct the monitoring equipment.
 - (2) The Permittee has determined that the compliance monitoring parameters established in the permit conditions are technically inappropriate, has previously submitted a request for an administrative amendment to the permit, and such request has not been denied or;
 - (3) An automatic measurement was taken when the process was not operating; or
 - (4) The process has already returned to operating within "normal" parameters and no response steps are required.
- (d) Records shall be kept of all instances in which the compliance related information was not met and of all response steps taken. In the event of an emergency, the provisions of 326 IAC 2-7-16 (Emergency Provisions) requiring prompt corrective action to mitigate emissions shall prevail.

Comment 3:

Condition D.2.1 (BACT Condition) established a VOC limit of 0.024 lbs/MMBtu at the outlet of the gas turbines. This is based on an AP-42 emission factor. The actual emissions may vary somewhat from unit to unit and may vary as a function of the load. Therefore, we request that the limit be set at 0.3 lbs/hr. This is slightly higher than the AP-42 emission factor but still represents an emission control efficiency in excess of 99%. The over-all VOC emissions from all eight turbines running at maximum capacity would still be limited to 2.4 lbs/hr or 10.5 tons/year, based on 8,760 hours of operation per year.

Response 3:

The 0.024 lbs/MMBtu VOC emission factor was originally used at AlliedSignal's request. However, it is recognized that the AP-42 emission factor is for VOC emissions from natural gas combustion. The process gas emissions may be somewhat different due to the unique composition of the gas, and may vary somewhat for the reasons stated in the comment. The newly provided emission factor still provides a sufficient VOC reduction to be considered BACT. Therefore, this change has been made to BACT Conditions D.2.1, D.3.2, and D.4.2, on respective pages 18, 19, and 21 of the final permit, to be as follows:

D.2.1 BACT Condition [326 IAC 8-1-6]

Gas fired turbines have been accepted as BACT for control of the VOC emissions from the CVD units, and all exhaust process gas from each CVD unit shall be collected in the pressurized storage vessel and combusted in the turbines with a maximum VOC emission rate of ~~0.024~~ 0.0344 pounds of VOC per million (MM) Btu of process gas burned, not to exceed 0.3 pounds of VOC per hour per turbine.

D.3.2 BACT Condition [326 IAC 8-1-6]

The process gas fired turbines have been accepted as BACT for control of the VOC emissions from the CVD units, and all exhaust process gas from each CVD unit shall be collected in the pressurized storage vessel and combusted in the turbines with a maximum VOC emission rate of ~~0.024~~ 0.0344 pounds of VOC per MMBtu, not to exceed 0.3 pounds of VOC per hour per turbine. With the fuel input limit detailed in the above condition, this is equivalent to a maximum VOC emission rate of ~~3.12~~ 4.47 tons per year from turbines GT-1 through GT-5.

D.4.2 BACT Condition [326 IAC 8-1-6]

The process gas fired turbines have been accepted as BACT for control of the VOC emissions from the CVD units, and all exhaust process gas from each CVD unit shall be collected in the pressurized storage vessel and combusted in the turbines with a maximum VOC emission rate of ~~0.024~~ 0.0344 pounds of VOC per MMBtu, not to exceed 0.3 pounds of VOC per hour per turbine. This is equivalent to a maximum VOC emission rate of ~~2.75~~ 3.94 tons per year of VOC from turbines GT-6 through GT-8.

In addition, the calculation spreadsheets for the turbine emissions have been modified using the new VOC emission limit. These are included in Appendix A of this Addendum. No change will be made to the TSD. The OAM prefers that the TSD reflect the permit that was on public notice. Changes to the permit or technical support material that occur after the public notice are documented in this Addendum to the Technical Support Document. This accomplishes the desired result of ensuring that these types of concerns are documented and part of the record regarding this permit decision.

The emissions from the proposed modification are now as follows:

Proposed Modification

PTE from the proposed modification (based on 8,760 hours of operation per year at rated capacity including enforceable emission control):

Pollutant	PM (ton/yr)	PM-10 (ton/yr)	SO ₂ (ton/yr)	VOC (ton/yr)	CO (ton/yr)	NO _x (ton/yr)
Proposed Modification	12.9	12.9	1.2	7.0 12.6	30.8	38.2
Contemporaneous Increases	----	----	----	----	----	----
Contemporaneous Decreases	----	----	----	----	----	----
Net Emissions	12.9	12.9	1.2	7.0 12.6	30.8	38.2
PSD or Offset Significant Level	25	15	40	40	100	40

Comment 4:

Condition D.1.3 requires that performance tests be conducted on both thermal oxidizers. We request that, since the oxidizers are identical units, the tests only be required for one of the units. Similarly, Conditions D.3.4 and D.4.4 require that four of the eight gas turbines be performance tested. We feel it is unwarranted to require us to test more than one of the identical turbines initially. In both instances, we would not object to the requirement to test additional units, if the first compliance test fails.

Response 4:

The IDEM OAM Compliance Data Section believes that testing of both thermal oxidizers and no fewer than four of the turbines is necessary to sufficiently characterize the emissions from these facilities. There has been no change to Conditions D.1.3, D.3.4, and D.4.4 in response to this comment.

Comment 5:

We request that the operating temperature listed in condition D.1.1 be eliminated from this condition, since it is not an emission limitation itself. We suggest that the operating temperature be included in a Compliance Monitoring condition which would require us to monitor temperatures and record the temperatures daily.

Response 5:

Condition D.1.1 has been amended to be as follows on page 17 of the final permit:

D.1.1 BACT Condition [326 IAC 8-1-6]

Each thermal oxidizer shall operate at all times that the corresponding electric carbonization furnaces are operated. When operating, the thermal incinerators shall ~~maintain a minimum operating temperature of 1,600° F or a temperature, fan amperage and duct velocity determined in the compliance tests (described in Operation Condition D.1.3)~~ to maintain a minimum 90% overall destruction of the volatile organic compound (VOC).

Monitoring of the operating temperature has been moved to a new Compliance Monitoring condition, D.4.4. In addition, the temperature wording was altered to clarify that if a stack test determines that a minimum operating temperature greater than 1,600° F is necessary to maintain the stated destruction, then the source will no longer have the option of operating the incinerators at 1,600° F. The new condition is as follows, on page 17 of the final permit:

D.1.4 Monitoring

To assure compliance with Condition D.1.1, the thermal incinerators shall maintain a minimum operating temperature of 1,600° F until the minimum temperature, fan amperage and duct velocity necessary to maintain a minimum 90% overall destruction of the volatile organic compound (VOC) is determined in the compliance tests (described in Operation Condition D.1.3). A continuous monitoring system shall be installed and operated to monitor and record the operating temperature. This system shall be accurate to ±5.0 percent.

Subsequent Section D.1 conditions have been renumbered.

Upon further review, OAM has made the following changes (changes are highlighted for emphasis):

1. Additional language has been added to Section A (Source Summary), and the county status has been updated, to be as follows on page 5 of the final permit:

SECTION A SOURCE SUMMARY

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM), and presented in the permit application. The information describing the source contained in conditions A.1 through A.3 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this permit pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

A.1 General Information

The Permittee owns and operates an aircraft landing system manufacturing operation.

Responsible Official: Carl Montalbine
Source Address: 3520 Westmoor Street, South Bend, Indiana 46628-1373
Mailing Address: 3520 Westmoor Street, South Bend, Indiana 46628-1373
SIC Code: 3728
County Location: St. Joseph
County Status: ~~Nonattainment for TSP (area north of Kern Road and east of Pine Road)~~
Attainment for all other criteria pollutants
Source Status: Part 70 Permit Program
Major Source, under PSD Rules;
Major Source, Section 112 of the Clean Air Act

2. Subsection (a) of Condition B.7 (Preventive Maintenance Plan) has been changed to be as follows on page 8 of the final permit:

B.7 Preventive Maintenance Plan [326 IAC 1-6-3]

- (a) If required by specific condition(s) in Section D of this permit, the Permittee shall prepare and maintain Preventive Maintenance Plans (PMP) within ninety (90) days after issuance of this permit, including the following information on each:

- (1) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission units and associated emission control devices;
- (2) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions;
- (3) Identification and quantification of the replacement parts that will be maintained in inventory for quick replacement.

If due to circumstances beyond its control, the PMP cannot be prepared and maintained within the above time frame, the Permittee may extend the date an additional ninety (90) days provided the Permittee notifies:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Management
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

3. Condition B.12 (Permit No Defense) has been modified by removing the references to the requirement to obtain a Title V permit. AlliedSignal is required to obtain a Title V permit and has submitted the appropriate application; however, the wording is not appropriate for inclusion in this construction permit. The condition is now as follows, on page 9 of the final permit:

B.12 Permit No Defense [326 IAC 2-1-10] [IC 13]

- ~~(a)~~ Indiana statutes from IC 13 and rules from 326 IAC, quoted in conditions in this permit, are those applicable at the time the permit was issued. The issuance or possession of this permit shall not alone constitute a defense against an alleged violation of any law, regulation or standard, ~~except for the requirement to obtain a Part 70 permit under 326 IAC 2-7.~~
- ~~(b)~~ This prohibition shall not apply to alleged violations of applicable requirements for which the Commissioner has granted a permit shield in accordance with 326 IAC 2-1-3.2 or 326 IAC 2-7-15, as set out in this permit in the Section B condition entitled "Permit Shield".

4. Condition C.3 (Operation of Equipment) has been modified as follows, on page 10 of the final permit:

C.3 Operation of Equipment

All air pollution control equipment listed in this permit **and used to comply with an applicable requirement** shall be operated at all times that the emission units vented to the control equipment are in operation, as described in Section D of this permit.

5. Conditions C.4 (Asbestos Abatement Projects - Accreditation) and C.8 (Asbestos Abatement Projects) have been combined into one condition, which is now as follows on page 10 of the final permit:

C.4 Asbestos Abatement Projects - Accreditation [326 IAC 14-10] [326 IAC 18]
[40 CFR 61, Subpart M 61.140]

~~Prior to the commencement of any demolition or renovation activities, the Permittee shall use an Indiana accredited asbestos inspector to inspect thoroughly the affected facility or part of the facility where the demolition or renovation operation will occur for the presence of asbestos, including Category I and Category II nonfriable asbestos-containing material. The requirement that the inspector be accredited is federally enforceable.~~

- (a) Notification requirements apply to each owner or operator. If the combined amount of regulated asbestos containing material (RACM) to be stripped, removed or disturbed is at least 260 linear feet on pipes or 160 square feet on other facility components, or at least thirty-five (35) cubic feet on all facility components, then the notification requirements of 326 IAC 14-10-3 are mandatory. All demolition projects require notification whether or not asbestos is present.
- (b) The Permittee shall ensure that a written notification is sent on a form provided by the Commissioner at least ten (10) working days before asbestos stripping or removal work or before demolition begins, per 326 IAC 14-10-3, and shall update such notice as necessary, including, but not limited to the following:
 - (1) When the amount of affected asbestos containing material increases or decreases by at least twenty percent (20%); or
 - (2) If there is a change in the following:
 - (A) Asbestos removal or demolition start date;
 - (B) Removal or demolition contractor; or
 - (C) Waste disposal site.
- (c) The Permittee shall ensure that the notice is postmarked or delivered according to the guidelines set forth in 326 IAC 14-10-3(2).
- (d) The notice to be submitted shall include the information enumerated in 326 IAC 14-10-3(3). All required notifications shall be submitted to:

Indiana Department of Environmental Management
Asbestos Section, Office of Air Management
100 North Senate Avenue, P.O. Box 6015
Indianapolis, Indiana 46206-6015
- (e) **Procedures for Asbestos Emission Control**
The Permittee shall comply with the emission control procedures in 326 IAC 14-10-4 and 40 CFR 61.145(c). Per 326 IAC 14-10-4 emission control requirements are mandatory for any removal or disturbance of RACM greater than three (3) linear feet on pipes or three (3) square feet on any other facility components or a total of at least 0.75 cubic feet on all facility components.
- (f) **Indiana Accredited Asbestos Inspector**
The Permittee shall comply with 326 IAC 14-10-1(a) that requires the owner or operator, prior to a renovation/demolition, to use an Indiana Accredited Asbestos Inspector to thoroughly inspect the affected portion of the facility for the presence of asbestos. The requirement that the inspector be accredited is federally enforceable.

Condition C.8, which was on page 11 of the draft permit, has been deleted. As detailed in Response to Comment 2 above, a new Condition C.8 (Compliance Monitoring Plan - Failure to Take Response Steps) has been added. Therefore, there was no need to renumber subsequent conditions.

- 6. Subsection (a) of Condition C.5 (Performance Testing) is now as follows, on page 11 of the final permit:

C.5 Performance Testing [326 IAC 3-6]

- (a) All testing shall be performed according to the provisions of 326 IAC 3-6 (Source Sampling Procedures), except as provided elsewhere in this permit, utilizing methods approved by IDEM, OAM.

A test protocol, except as provided elsewhere in this permit, shall be submitted to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Management
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

no later than thirty-five (35) days ~~before~~ prior to the intended test date. The Permittee shall submit a notice of the actual test date to the above address so that it is received at least two weeks prior to the test date.

7. Condition C.7 (Monitoring Methods) has been amended as follows, on page 12 of the final permit:

C.7 Monitoring Methods [326 IAC 3]

Any monitoring or testing performed to meet the applicable requirements of this permit shall be performed according to the provisions of 326 IAC 3, 40 CFR 60, Appendix A, or other approved methods as specified in this permit.

8. Subsection (a) of Condition C.10 (Emission Statement) has been amended as follows, on page 13 of the final permit:

C.10 Emission Statement [326 IAC 2-6]

- (a) The Permittee shall submit ~~a certified,~~ an annual emission statement certified pursuant to the requirements of 326 IAC 2-6, that must be received by April 15 of each year and must comply with the minimum requirements specified in 326 IAC 2-6-4. The annual emission statement shall meet the following requirements:

- (1) Indicate actual emissions of criteria pollutants from the source, in compliance with 326 IAC 2-6 (Emission Reporting);
- (2) Indicate actual emissions of other regulated pollutants from the source, for purposes of Part 70 fee assessment.

9. Subsection (a) of Condition C.12 (General Reporting Requirements) has been changed to be as follows on page 14 of the final permit:

C.12 General Record Keeping Requirements

- (a) Records of all required monitoring data and support information shall be retained for a period of at least five (5) years from the date of monitoring sample, measurement, report, or application. These records shall be kept at the source location for a minimum of three (3) years and ~~within one (1) hour~~ available ~~verbal~~ upon the request of an IDEM, OAM, representative, for a minimum of three (3) years. ~~They the records~~ may be stored elsewhere for the remaining two (2) years ~~providing as long as they are made~~ available upon ~~within thirty (30) days after~~ request. ~~If the Commissioner makes a~~ written request for records to the Permittee, the Permittee shall furnish the records to the Commissioner or local agency within a reasonable time.

10. Condition C.13 (General Reporting Requirements) has been modified to be as follows on page 15 of the final permit:

C.13 General Reporting Requirements

- (a) ~~Any quarterly report(s) required by conditions~~ **To affirm that the source has met all the compliance monitoring requirements stated in Section D of this permit the source shall submit a Quarterly Compliance Monitoring Report. Any deviation from the requirements and the date(s) of each deviation must be reported. be submitted to-**
- (b) **The report required in (a) of this condition and reports required by conditions in Section D of this permit shall be submitted to:**
- Indiana Department of Environmental Management
Compliance Data Section, Office of Air Management
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015
- (~~b~~c) Unless otherwise specified in this permit, any notice, report, or other submission required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAM, on or before the date it is due.
- (~~e~~d) Unless otherwise specified in this permit, any quarterly report shall be submitted within thirty (30) days of the end of the reporting period.
- (~~e~~) ~~All instances of deviations from any requirements of this permit~~ **All instances of deviations as described in Section B- Deviations from Permit Requirements Conditions must be clearly identified in such reports** ~~taken.~~
- (~~e~~f) Any corrective actions or **response steps taken** as a result of ~~an exceedance of a limit, an excursion from the parametric values, or a malfunction that may have caused excess emissions~~ **each deviation** must be clearly identified in such reports.
- (~~e~~g) The first report shall cover the period commencing ~~on the postmarked submission date of the Affidavit of Construction~~ **this permit and ending on the last day of the reporting period.**

11. In the facility description at the beginning of Section D.1, a correction was made to a facility ID number, to be as follows on page 17 of the final permit:

Four (4) electric carbonization furnaces (ID Nos. ECF-2 through ECF-5), each with a maximum capacity of 2,900 pounds of preforms of brake discs per batch at a maximum rate of 91 batches per year. ECF-2 and ECF-3 are both controlled by one (1) natural gas fired thermal oxidizer (ID No. TO-1), rated at 1.5 million (MM) Btu per hr, exhausting through one (1) stack (ID No. 470). ECF-4 and ~~ECF-3~~ **ECF-5** are both controlled by one (1) natural gas fired thermal oxidizer (ID No. TO-2), rated at 1.5 MMBtu per hour, exhausting through one (1) stack (ID No. 471). (ECF-2 and ECF-3 were previously permitted in CP-141-8117-00005, issued May 20, 1997, with a 1.0 MMBtu per hour natural gas fired thermal afterburner for VOC control.)

12. Conditions D.1.3, D.3.4, and D.4.4 (Testing Requirements) on pages 17, 20, and 22 of the final permit were modified by adding the sentence:

In addition to these requirements, IDEM may require compliance testing when necessary to determine if the facility is in compliance.

13. Condition D.2.3 (Testing Requirements) for the CVD units has been modified to require stack testing of a representative selection of the CVD units, prior to the exhaust gas collection system. This testing is believed to be necessary in order to calculate emissions for the existing CVDs until the exhaust is controlled by the turbines, and from all of the CVDs during possible future periods of uncontrolled emissions. The condition is now as follows, on page 18 of the final permit:

D.2.3 Testing Requirements [326 IAC 2-1-3]

~~Testing of these facilities is not specifically required by this permit because all of the exhaust process gas will be collected for combustion in the turbines. Compliance with the VOC limit specified in Condition D.2.1 shall be determined by performance tests conducted on the turbines in accordance with Section C - Performance Testing.~~

- (a) Compliance stack tests shall be performed from a representative selection of the CVD units (ID Nos. CVD-1 through CVD-20) during the period between 90 days and 120 days after issuance of this permit, using a test protocol determined in conjunction with the IDEM OAM Compliance Data Section.
- (b) The compliance tests shall be performed for the following pollutants to demonstrate the capture efficiency of the collection and distribution system for the exhaust process gas, to establish emission factors for periods of uncontrolled emissions during malfunction, and to obtain information to ensure public health is protected:
- Opacity, PM, PM-10, NO_x, CO, and speciated VOCs to include acetylene, benzene, ethene, naphthalene, propyne, styrene, and toluene.
- (c) Compliance with the VOC limit specified in Condition D.2.1 shall be determined by performance tests conducted on the turbines in accordance with Section C - Performance Testing. Inlet and outlet stack testing for VOC is required for the turbines, see sections D.3.4 and D.4.4. In addition to these requirements, IDEM may require compliance testing when necessary to determine if the facility is in compliance.

14. Condition D.3.1 (PSD Minor Limit of Potential Emissions) has been modified because the NO_x emission rate must not exceed 0.3 pounds per MMBtu of process gas to limit the potential to emit of NO_x from the five (5) turbines GT-1 through GT-5 to no greater than 39 tons per year. The condition is now as follows, on page 19 of the final permit:

D.3.1 PSD Minor Limit of Potential Emissions [326 IAC 2-2] [40 CFR 52.21]

- (a) Pursuant to CP-141-7277-00005, issued on March 26, 1997, the input of process gas to the five (5) turbines identified as GT-1 through GT-5 shall be limited to 29.843 million cubic foot (MMCF) total per month with a maximum NO_x emission rate of 0.3 pounds of NO_x per MMBtu of process gas. This limitation is necessary to limit the potential to emit of NO_x to no greater than 3.25 tons per month. This limit makes 326 IAC 2-2 (Prevention of Significant Deterioration) not applicable. For purposes of determining compliance based on NO_x emissions, each MMCF of natural gas burned shall be equivalent to 1.378 MMCF of process gas.
- (b) The turbines shall use water injection to reduce NO_x emissions. The injection ratio shall be maintained at 0.7 water/fuel, until an injection ratio is determined in the compliance tests (described in Operation Condition D.3.4). The water/fuel injection ratio shall be used as a surrogate parameter for NO_x emission monitoring.

15. Condition D.4.1 has been modified to give a specific preliminary water/fuel ratio, and to state that a final water/fuel ratio will be determined in conjunction with stack testing of the turbines. The wording was changed from fuel/water to water/fuel because that is the way the ratio was provided by the source. The condition is now as follows, on page 21 of the final permit.

D.4.1 PSD Minor Limit of Potential Emissions [326 IAC 2-2] [40 CFR 52.21]

- (a) The maximum NO_x emission rate from each of the three (3) process gas fired turbines identified as GT-6 through GT-8 shall be 0.3 pounds of NO_x per million (MM) Btu of process gas input to the turbines. This voluntary limit restricts the potential to emit of NO_x to 34.33 tons per 365 consecutive day period. This limit makes 326 IAC 2-2 (Prevention of Significant Deterioration) not applicable. For purposes of determining compliance based on NO_x emissions, each million cubic foot (MMCF) of natural gas burned shall be equivalent to 1.378 MMCF of process gas.
- (b) The turbines shall use water injection to reduce NO_x emissions. **The injection ratio shall be maintained at 0.7 water/fuel, until an injection ratio is determined in the compliance tests (described in Operation Condition D.4.4).** The ~~fuel/water~~ water/fuel injection ratio shall be used as a surrogate parameter for NO_x emission monitoring.

16. Conditions D.3.4 and D.4.4 (Testing Requirements) have been divided into sections to make the requirements clearer. The conditions are now as follows on pages 19 and 21 of the final permit:

D.3.4 Testing Requirements [326 IAC 2-1-3]

- (a) Compliance stack tests shall be performed for NO_x and inlet and outlet VOC emissions from three (3) of the five (5) 8.71 MMBtu per hour gas fired turbines, (ID Nos. GT-1 through GT-5), within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up. If the testing on one of the five (5) turbines (ID Nos. GT-1 through GT-5) fails, compliance stack testing shall be performed again on that one (1) turbine as well as on the two (2) turbines previously not tested.
- (b) Inlet and outlet VOC tests on the turbines shall be performed to determine the efficiency of the turbines in controlling the VOC emissions from the CVD units. VOC and NO_x emission tests shall be conducted while the turbine being tested is operating at ninety-five percent (95%) to one-hundred percent (100%) of its operating capacity. NO_x emission tests shall also be conducted while the turbine being tested is operating at approximately seventy-five percent (75%) and fifty percent (50%) of its operating capacity. These tests shall be performed according to 326 IAC 3-6 (Source Sampling Procedures) using the methods specified in the rule or as approved by the Commissioner.
- (c) The water injection rate to the burners, exhaust stack temperature, and rate of energy produced by the turbine will also be monitored throughout each stack test to determine surrogate parameters for emission monitoring. In addition to these requirements, IDEM may require compliance testing when necessary to determine if the facility is in compliance.

D.4.4 Testing Requirements [326 IAC 2-1-3]

- (a) Compliance stack tests shall be performed for NO_x and inlet and outlet VOC emissions from one (1) of the three (3) 8.71 MMBtu per hour gas fired turbines, (ID Nos. GT-6 through GT-8), within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up. If the testing on one of the three (3) turbines (ID Nos. GT-6 through GT-8) fails, compliance stack testing shall be performed again on that one (1) turbine as well as on the two (2) turbines previously not tested.
- (b) Inlet and outlet VOC tests on the turbines shall be performed to determine the efficiency of the turbines in controlling the VOC emissions from the CVD units. VOC and NO_x emission tests shall be conducted while the turbine being tested is operating at ninety-five percent (95%) to one-hundred percent (100%) of its operating capacity.

NO_x emission tests shall also be conducted while the turbine being tested is operating at approximately seventy-five percent (75%) and fifty percent (50%) of its operating capacity. These tests shall be performed according to 326 IAC 3-6 (Source Sampling Procedures) using the methods specified in the rule or as approved by the Commissioner.

- (c) The water injection rate to the burners, exhaust stack temperature, and rate of energy produced by the turbine will also be monitored throughout each stack test to determine surrogate parameters for emission monitoring. In addition to these requirements, IDEM may require compliance testing when necessary to determine if the facility is in compliance.

Mail to: Permit Administration & Development Section
Office Of Air Management
100 North Senate Avenue
P. O. Box 6015
Indianapolis, Indiana 46206-6015

AlliedSignal, Inc.
3520 Westmoor Street
South Bend, Indiana 46628-1373

Affidavit of Construction

I, _____, being duly sworn upon my oath, depose and say:
(Name of the Authorized Representative)

1. I live in _____ County, Indiana and being of sound mind and over twenty-one (21) years of age, I am competent to give this affidavit.
2. I hold the position of _____ for _____.
(Title) (Company Name)
3. By virtue of my position with _____, I have personal
(Company Name)
knowledge of the representations contained in this affidavit and am authorized to make these representations on behalf of _____.
(Company Name)
4. I hereby certify that AlliedSignal, Inc., 3520 Westmoor Street, South Bend, Indiana 46628, has constructed the modification to the existing aircraft wheel and brake manufacturing operation in conformity with the requirements and intent of the construction permit application received by the Office of Air Management on July 2, 1997, and as permitted pursuant to **Construction Permit No. CP-141-8761, Plant ID No. 141-00005** issued on _____.
5. I hereby certify that AlliedSignal, Inc. is now subject to the Title V program and has submitted a Title V operating permit application (T141-7442-00005) on December 10, 1996.

Further Affiant said not.

I affirm under penalties of perjury that the representations contained in this affidavit are true, to the best of my information and belief.

Signature

Date

STATE OF INDIANA)
)SS

COUNTY OF _____)

Subscribed and sworn to me, a notary public in and for _____ County and State of
Indiana on this _____ day of _____, 19 _____.

My Commission expires: _____

Signature

Name (typed or printed)

**TSD Addendum, Appendix A: Emission Calculations
Process Gas Combustion: Water-Injected Low-NOx Turbines
GT-1 through GT-5 (previously permitted in CP 141-7277)**

Company Name: **Allied Signal, Inc., Aircraft Landing Systems**
Address City IN Zip: **South Bend, IN 46628**
CP: **141-7277**
Plt ID: **141-00005**
Reviewer: V. Cordell
Date: May 26, 1998

MAXIMUM POTENTIAL

Heat Input Capacity *

MMBtu/hr

43.55

Sulfur Content of fuel, %: 0.1% (max.)

Pollutant

	PM10	SO2	NOx **	VOC **	CO
Emission Factor in lb/MMBtu	0.0419	0.0009 (0.94S)	0.3000	0.0344	0.1100
Potential Emission in lbs/hr	1.82	0.04	13.07	1.50	4.79
Potential Emission in lbs/day	43.79	0.98	313.56	35.95	114.97
Potential Emission in tons/yr	7.99	0.18	57.22	6.56	20.98

POTENTIAL WITH FUEL LIMIT

Heat Input Capacity

MMBtu/yr

260000.00

Sulfur Content of fuel, %: 0.1% (max.)

Pollutant

	PM10	SO2	NOx **	VOC **	CO
Emission Factor in lb/MMBtu	0.0419	0.0009 (0.94S)	0.3000	0.0344	0.1100
Potential Emission in tons/yr	5.45	0.12	39.00	4.47	14.30

Methodology

* Combined capacity of 5 turbines, 8.71 MMBtu/hr each.

* Emission Factors from AP 42, Chapter 3.1, Table 3.1-2, SCC #2-01-002-01 (revised October, 1996), except for NOx and VOC which were provided by AlliedSignal based on analysis of the low-NOx burner with water injection.

Emission (lbs/day) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lb/MMBtu) x 24 hrs/day

Emission (tons/yr) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lb/MMBtu) x 8760 hrs/yr x 1 ton/ 2,000 lbs

NOTE: The process gas consists of natural gas which has been thermally cracked and partially depleted in the Carbon Vapor Deposition units, mixed with nitrogen gas which is used to purge air from the CVD process. The process gas has a heating value of 726 Btu/cf, compared to 1000 Btu/cf for natural gas. Stack testing will be required to verify NOx and VOC emission factors.

TSD Addendum, Appendix A: Emission Calculations
Process Gas Combustion: Water-Injected Low-NOx Turbines
GT-6 through GT-8

Company Name: **Allied Signal, Inc.**
Address City IN Zip: **3520 Westmoor Street, South Bend, Indiana 46628**
CP/Plt ID#: **141-8761-00005**
Reviewer: Vickie Cordell
Date: May 26, 1998

MAXIMUM POTENTIAL

Heat Input Capacity*
MMBtu/hr

26.13

Sulfur Content of fuel, %: 0.1% (max.)

	Pollutant				
	PM10	SO2	NOx **	VOC **	CO
Emission Factor in lb/MMBtu	0.0419	0.0009 (0.94S)	0.3000	0.0344	0.1100
Potential Emission in lbs/hr	1.09	0.02	7.84	0.90	2.87
Potential Emission in lbs/day	26.28	0.59	188.14	21.57	68.98
Potential Emission in tons/yr	4.80	0.11	34.33	3.94	12.59

Methodology

* Combined capacity of 3 turbines, 8.71 MMBtu/hr each.

** Emission Factors from AP 42, Chapter 3.1, Table 3.1-2, SCC #2-01-002-01 (revised October, 1996), except for NOx and VOC which were provided by AlliedSignal based on analysis of the low-NOx burner with water injection.

Emission (lbs/day) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lb/MMBtu) x 24 hrs/day

Emission (tons/yr) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lb/MMBtu) x 8760 hrs/yr x 1 ton/ 2,000 lbs

NOTE: The process gas consists of natural gas which has been thermally cracked and partially depleted in the Carbon Vapor Deposition units, mixed with nitrogen gas which is used to purge air from the CVD process. The process gas has a heating value of 726 Btu/cf, compared to 1000 Btu/cf for natural gas. Stack testing will be required to verify NOx and VOC emission factors.

Appendix A: Emission Calculations Emissions Summary

Company Name: AlliedSignal, Inc.
Address City IN Zip: 3520 Westmoor Street, South Bend, Indiana 46628
CP/Plt ID: 141-8761-00005
Reviewer: Vickie Cordell
Date: March 5, 1998

Potential Electric Carbonization Furnace Emissions (tons/year): for 4 (four) furnaces, including 2 (two) previously permitted in CP-141-8117-000005, issued May 20, 1997.

(1) Pollutant	(2) Uncontrolled	(3) With 90% Control	(4) Combustion emissions from Thermal Oxidizers	(5) TOTAL, after control (Sum of columns (3) and (4))
PM	7.92	7.92	0.16	8.08
PM-10	7.92	7.92	0.16	8.08
SO ₂	1.06	1.06	0.01	1.07
NO _x	2.54	2.54	1.31	3.85
VOC	41.28	4.13	0.07	4.20
CO	17.96	17.96	0.28	18.24

Total emissions based on rated capacity at 8,760 hours/year.

Potential uncontrolled VOC emissions from the four (4) carbonization furnaces include an uncontrolled VOC emission rate of 41.28 tons per year, which was derived from the stack test results from a similar unit in the emission calculations for CP-141-8117-000005.

Potential Chemical Vapor Deposition (CVD) Unit Emissions (tons/year)

Potential VOC emissions for one (1) CVD unit were provided in the permit application for CP-141-8117-000005.

The maximum VOC emission rate in pounds per hour was derived from previous stack test results.

For CVD-3 through CVD-20:

$74 \text{ lbs VOC/hr} \times 200 \text{ hrs soak time} / 296 \text{ hour cycle} \times 8760 \text{ hrs / year} \times 1 \text{ ton} / 2000 \text{ lbs} = 219 \text{ tons VOC/year per CVD.}$

For CVD-1 and CVD-2:

The potential VOC emissions were calculated based on the volume of gas input to the different-sized CVD units.

A maximum of 790 scfh of natural gas, nitrogen gas, and propane gas are input to each of CVD-1 and CVD-2.

A maximum of 8170 scfh of natural gas, nitrogen gas, and propane gas are input to the size of unit previously stack tested.

$219 \text{ tons VOC/year per CVD} \times 790 \text{ scfh input gas} / 8170 \text{ scfh input gas} = 20 \text{ tons VOC/year per CVD.}$

TOTAL Potential CVD Emissions, Before Control:

$(18 \text{ units} \times 219 \text{ tons VOC/year}) + (2 \text{ units} \times 20 \text{ tons VOC/year}) = \underline{3982 \text{ tons VOC/year}}$

All of the CVD emissions will be collected in the pressurized storage vessel, PV-1, and combusted in the turbines.

The turbines are anticipated to provide at least 99.9% control of the VOC emission. Actual VOC control efficiency will be determined by stack testing, with inlet and outlet testing of the turbines.

Potential VOC emissions after control will be the potential VOC emissions from the turbines, see Pages 3 and 4 of TSD Appendix.

**Appendix A: Emission Calculations
 Natural Gas Combustion Only
 MM Btu/hr 0.3 - < 10
 Thermal Oxidizers**

Company Name: AlliedSignal, Inc.
Address City IN Zip: 3520 Westmoor Street, South Bend, Indiana 46628
CP/Plt ID: 141-8761-00005
Reviewer: Vickie Cordell
Date: March 5, 1998

Heat Input Capacity* MMBtu/hr	Potential Throughput MMCF/yr
3.0	26.3

Emission Factor in lb/MMCF	Pollutant					
	PM	PM10	SO2	NOx	VOC	CO
	12.0	12.0	0.6	100.0	5.3	21.0
Potential Emission in tons/yr	0.16	0.16	0.01	1.31	0.07	0.28

Methodology

* Combined capacity of two (2) 1.5 MMBtu/hr oxidizers, including one (1) previously permitted in CP-141-8117-00005, issued May 20, 1997.

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Emission Factors for NOx: uncontrolled = 100, Low Nox Burner = 17, Flue gas recirculation = 36

Emission Factors for CO: uncontrolled = 21, Low NOx Burner = 27, Flue gas recirculation = ND

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Emission Factors from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, and 1.4-3, SCC #1-03-006-03

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

TSD Addendum, Appendix A: Emission Calculations
Process Gas Combustion: Water-Injected Low-NOx Turbines
GT-6 through GT-8

Company Name: **Allied Signal, Inc.**
 Address City IN Zip: **3520 Westmoor Street, South Bend, Indiana 46628**
 CP/Plt ID#: **141-8761-00005**
 Reviewer: Vickie Cordell
 Date: February 26, 1998

MAXIMUM POTENTIAL

Heat Input Capacity*

MMBtu/hr

26.13

Sulfur Content of fuel, %:

0.1% (max.)

Emission Factor in lb/MMBtu	Pollutant				
	PM10	SO2	NOx **	VOC	CO
	0.042	0.001 (0.94S)	0.300	0.024	0.110
Potential Emission in lbs/hr	1.09	0.02	7.84	0.63	2.87
Potential Emission in lbs/day	26.28	0.59	188.14	15.05	68.98
Potential Emission in tons/yr	4.80	0.11	34.33	2.75	12.59

Methodology

* Combined capacity of 3 turbines, 8.71 MMBtu/hr each.

** Emission Factors from AP 42, Chapter 3.1, Table 3.1-2, SCC #2-01-002-01 (revised October, 1996), except for NOx which is provided by AlliedSignal based on analysis of the low-NOx burner with water injection.

Emission (lbs/day) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lb/MMBtu) x 24 hrs/day

Emission (tons/yr) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lb/MMBtu) x 8760 hrs/yr x 1 ton/ 2,000 lbs

NOTE: The process gas consists of natural gas which has been thermally cracked and partially depleted in the Carbon Vapor Deposition units, mixed with nitrogen gas which is used to purge air from the CVD process. The process gas has a heating value of 726 Btu/cf, compared to 1000 Btu/cf for natural gas. Stack testing will be required to verify NOx emission factor.

TSD Addendum, Appendix A: Emission Calculations
Process Gas Combustion: Water-Injected Low-NOx Turbines
GT-1 through GT-5 (previously permitted in CP 141-7277)

Company Name: **Allied Signal, Inc., Aircraft Landing Systems**
 Address City IN Zip: **South Bend, IN 46628**
 CP: **141-7277**
 Plt ID: **141-00005**
 Reviewer: V. Cordell
 Date: March 5, 1998

MAXIMUM POTENTIAL

Heat Input Capacity
 MMBtu/hr

43.55

Sulfur Content of fuel, %: 0.1% (max.)

	Pollutant				
	PM10	SO2	NOx *	VOC	CO
Emission Factor in lb/MMBtu	0.042	0.001 (0.94S)	0.300	0.024	0.110
Potential Emission in lbs/hr	1.82	0.04	13.07	1.05	4.79
Potential Emission in lbs/day	43.79	0.98	313.56	25.08	114.97
Potential Emission in tons/yr	7.99	0.18	57.22	4.58	20.98

POTENTIAL WITH FUEL LIMIT

Heat Input Capacity
 MMBtu/yr

260000.00

Sulfur Content of fuel, %: 0.1% (max.)

	Pollutant				
	PM10	SO2	NOx *	VOC	CO
Emission Factor in lb/MMBtu	0.042	0.001 (0.94S)	0.300	0.024	0.110
Potential Emission in tons/yr	5.45	0.12	39.00	3.12	14.30

Methodology

* Emission Factors from AP 42, Chapter 3.1, Table 3.1-2, SCC #2-01-002-01 (revised October, 1996), except for NOx which is provided by AlliedSignal based on analysis of the low-NOx burner with water injection.

Emission (lbs/day) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lb/MMBtu) x 24 hrs/day

Emission (tons/yr) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lb/MMBtu) x 8760 hrs/yr x 1 ton/ 2,000 lbs

NOTE: The process gas consists of natural gas which has been thermally cracked and partially depleted in the Carbon Vapor Deposition units, mixed with nitrogen gas which is used to purge air from the CVD process. The process gas has a heating value of 726 Btu/cf, compared to 1000 Btu/cf for natural gas. Stack testing will be required to verify NOx emission factor.

TSD Addendum, Appendix A: Emission Calculations
Process Gas Fuel Limit
for Turbines GT-1 through GT-5 (previously permitted in CP 141-7277)

Company Name: **Allied Signal, Inc.**
 Address City IN Zip: **3520 Westmoor Street, South Bend, Indiana 46628**
 CP: **141-8761**
 Plt ID: **141-00005**
 Reviewer: V. Cordell
 Date: March 5, 1998

FUELLIMIT

NOx limit: 39 tons per year
 NOx emission factor: 0.3 lb/MMBtu (see Page 3 of TSD Appendix A for emission factor explanation).
 Heating value of process gas: 726 Btu/cf

$$39 \text{ tons NOx/year} \times 2000 \text{ lb/ton} / (0.30 \text{ lb NOx} / \text{MMBtu}) = 260,000 \text{ MMBtu/yr}$$

$$260,000 \text{ MMBtu/yr} \times (1 \text{ cf} / 726 \text{ Btu}) \times (1 \text{ yr} / 12 \text{ months}) = 29.84389 \text{ MCF/month}$$

Round down to ensure remain below NOx limit; therefore, fuel limit is : 29.843 MMCF/month of process gas

PROCESS GAS EQUIVALENT

Natural gas fired for purging and startup.

$$\text{Process gas equivalent: } 1000 \text{ MMBtu/MMCF natural gas} / 726 \text{ MMBtu/MMCF process gas} = 1.37741 \frac{\text{MMCF process gas}}{\text{MMCF natural gas}}$$

Round up to ensure NOx remains below limit; therefore, equivalent is: 1.378 $\frac{\text{MMCF process gas}}{\text{MMCF natural gas}}$

CHECK:

If fire:
 3 MMCF/mo of natural gas: $3 \text{ MMCF} \times 1.378 \text{ MMCF process gas/MMCF natural gas} = 4.134 \text{ MMCF/mo process gas}$
 $29.843 \text{ MMCF/mo permitted} - 4.134 \text{ MMCF/mo equivalent natural gas} = 25.709 \text{ MMCF/mo process gas}$

$$\begin{aligned} 3.00 \text{ MMCF natural gas} \times 1000 \text{ Btu/cf} \times 0.30 \text{ lb NOx/MMBtu} &= 900.0000 \text{ lb NOx/mo} \\ 25.709 \text{ MMCF process gas} \times 726 \text{ Btu/cf} \times 0.30 \text{ lb NOx/MMBtu} &= \frac{5599.4200 \text{ lb NOx/mo}}{6499.4200 \text{ lb NOx/mo}} \end{aligned}$$

$$6499.42 \text{ lb NOx/mo} \times 1 \text{ ton}/2000 \text{ lb} \times 12 \text{ mo/yr} = 38.997 \text{ ton NOx/yr}$$

If fire:
 10 MMCF/mo of natural gas: $10 \text{ MMCF} \times 1.378 \text{ MMCF process gas/MMCF natural gas} = 13.78 \text{ MMCF/mo process gas}$
 $29.843 \text{ MMCF/mo permitted} - 13.78 \text{ MMCF/mo equivalent natural gas} = 16.063 \text{ MMCF/mo process gas}$

$$\begin{aligned} 10.00 \text{ MMCF natural gas} \times 1000 \text{ Btu/cf} \times 0.30 \text{ lb NOx/MMBtu} &= 3000.0000 \text{ lb NOx/mo} \\ 16.063 \text{ MMCF process gas} \times 726 \text{ Btu/cf} \times 0.30 \text{ lb NOx/MMBtu} &= \frac{3498.5214 \text{ lb NOx/mo}}{6498.5214 \text{ lb NOx/mo}} \end{aligned}$$

$$6498.5214 \text{ lb NOx/mo} \times 1 \text{ ton}/2000 \text{ lb} \times 12 \text{ mo/yr} = 38.991 \text{ ton NOx/yr}$$